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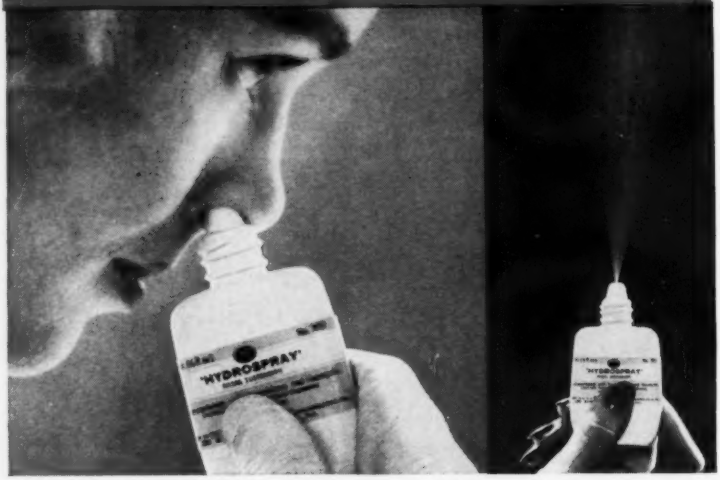

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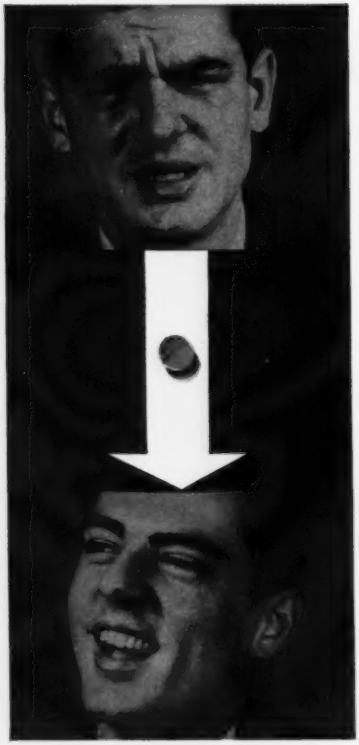

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EDITORIAL

Gaits as Clues to Diagnosis

A valuable aid in the diagnosis of numerous disorders in children and adults is a careful observation of the patient's step

JAMES M. NORTHINGTON, M.D., *Editor*

In medical college, I was taught to observe carefully a patient's gait as he came into the examining room, and even to observe the gaits of persons on the street. The reason was that in many cases valuable clues to diagnosis could thus be obtained. In my first 20 years of practice, I would occasionally see an article in a medical journal devoted to this subject; but not for decades do I recall seeing such an article until just a few weeks ago.

This article is regarded to be of such value as to make it worthy of having its teachings passed on to the readers of *Clinical Medicine* for their instruction and edification.[1]

1. *Therapeutic Notes* 63:211-215,1956.

In advancing, we make six displacements of the body's center of gravity, pelvic rotation, pelvic tilt, knee flexion, knee and foot interaction, and lateral pelvic movemet. When all are functioning properly, sharp up-and-down and side-to-side movements of the body are prevented, the body's center of gravity being advanced along a path that resembles a regular sinusoidal curve of low amplitude. This form of locomotion requires the least expenditure of energy.

Normal gait shows many variations due to exaggeration of one or more of the determinants of gait. That these variations do not increase the energy requirements for walk-

ing is attributable to effective compensation by other mechanisms.

In pathologic gait, the body attempts to compensate for lost mechanisms, by exaggerating mechanisms of locomotion that remain intact. Loss of one determinant of gait can be compensated for with reasonable effectiveness, but if two or more determinants are lost, locomotion can be achieved only by a greater expenditure of energy.

Abnormalities of skeletal structures of the back and lower limbs and their articulations are the commonest cause of disturbances in gait. Knock-knee and bow-leg gaits represent adjustments to directional variations in bone growth. In-toeing and out-toeing gaits reflect the pressure of tibial torsion. Pain-producing affections of the limbs, such as sprain, fracture and infection cause the hobbling gait.

DISORDERS OF THE HIP

Most diseases involving the hip produce disturbances in gait; a limp may be the first indication of hip disease. In early stages of tuberculosis of the hip, the patient walks gingerly on the toes of the affected side; with progression of the disease process, the affected side is seen to drop during locomotion. A child with slipping of the capital femoral epiphysis limps even before slipping takes place. He drops his shoulder on the affected side when the limb on that side supports the body. The limp becomes more pronounced as pain and muscle spasm appear. Bilateral congenital dislocation of the hip is manifested by a waddling gait; the patient walks on a wide base and sways from side to side; the abdomen protrudes and the lumbar spine is lordotic. The waddling gait is observed also in bilateral coxa vara.

Flexion fixation of the knee is compensated for by an equinus position of the foot on the affected side. When both knees are locked in flexion, the patient simply uses shorter steps; when the flexion is greater than 30°, it is difficult to lift the feet off the ground, so a shuffling gait is used, with the body bent forward. Extension fixation of the knee forces the pelvis on the affected side to rise during walking to permit the leg to swing freely. Bilateral fixation results in rigid, awkward movements with exaggerated swinging of the shoulders. When the ankle joint is fixed in plantar flexion, the leg is lifted high in walking in order that the toes may clear the ground. If the ankle is in dorsiflexion, the body cannot be propelled forward in the normal manner, push-off being achieved by placing the joint of the large toe on the ground with the leg in marked external rotation.

The child with progressive muscular dystrophy has an awkward, waddling gait, leaning back from the hips. His calf muscles stand out because of pseudohypertrophy. Rising from the recumbent position is done by "climbing up the legs" to stand up. In hereditary muscular atrophy of the peroneal type (Charcot-Marie-Tooth disease), the patient walks unsteadily and falls frequently. He adopts a stork-leg gait, using the outside of the foot for walking without placing the heels on the ground.

NERVE INVOLVEMENT

The steppage gait with foot drop results from peroneal nerve involvement. The patient raises his foot high, turns the toes up, and comes

down on his heel. In sciatics, the knee and hip are flexed on the affected side, dropping the pelvis, and the patient advances with short steps. Involvement of the femoral nerve results in buckling of the knee because of quadriceps weakness. The patient places his hand on the front of the thigh to keep the knee extended, particularly when walking up a grade or climbing stairs.

DISEASES OF THE SPINAL CORD

Disorders of the spinal cord probably account for the majority of neurologic gait disturbances. Herniation of an intervertebral disk produces sharp root pain, causing the patient to walk with a listing limp, to sit on the unaffected buttock, and to rise by pushing himself up with his hand and the unaffected leg. Tabes dorsalis causes an ataxic gait—one lifts his feet high, then slaps them down hard, watching his progress carefully. Other diseases of the spinal cord that cause interference with locomotion include traumatic and pathologic fracture, congenital malformations, and multiple sclerosis. Poliomyelitis accounts for a large variety of paralytic gaits.

Hemiplegia is a chief manifestation of cerebral palsies of children and vascular accidents in older persons. The leg is spastic and extended and swings around in an arc of a circle during walking instead of being lifted. Patients with cerebral palsy often demonstrate the scissors gait, in which the legs cross in front of one another and the heels take the weight of the body.

In paralysis agitans, and occasionally in the postencephalitis syndrome, the patient begins walking in a slow, shuffling manner with his head and body bent forward. The pace becomes more rapid until the characteristic short-stepped festinating gait gives the patient the appearance of running after his own center of gravity. Patients with Huntington's and Sydenham's chorea use lurching, twisting movements that result in a totally irregular gait. In dystonia musculorum deformans, the movements are even more bizarre. Cerebellar tumor, thrombosis of the posterior inferior cerebellar artery, and acoustic neurinoma cause a staggering gait that resembles that of alcoholic intoxication.

SENILITY

Arteriosclerotic and other senile changes cause the mincing gait characterized by short, shuffling steps. Of uncertain etiology is astasia trepidante, or Petren's gait, of the aged. The patient takes a few very short steps, pauses, begins again after encouragement, only to stop once more after a few steps.

Hysterical patients demonstrate a number of abnormalities in locomotion. These are usually of a bizarre nature. In astasia-abasia, ability to stand and walk appears to be lost entirely.

ORIGINAL ARTICLES

Diagnosis of Carcinoma of Right Colon

The earliest manifestations of malignant disease of the right colon are considered; principal characteristics of neoplasms are identified

M. TISCHER HOERNER, M.D., *Dayton, Ohio*

Carcinoma of the right side of the colon is notorious for the insidious manner in which it develops. For this reason, careful consideration must be given to the milder complaints associated with disturbances of the intestine. The treatment of advanced neoplastic disease of the right colon is not as successful as one would desire. Consequently, emphasis must be placed on the importance of a diagnosis in the early stages of the disease. The early symptoms often assume bizarre patterns and may simulate various other intra-abdominal lesions.

PATHOLOGY

While considering cancer of the large intestine, it is best to divide this organ into right and left halves. The right half corresponds to that portion proximal to the middle of the transverse colon and develops from the midgut. The left half is composed of the remainder of the large intestine, that distal to the middle of the transverse colon, and develops with the rectum from the hindgut.

Carcinoma of the right half of the colon often is composed of a polypoid, fungating lesion which may grow to considerable proportion before it produces symptoms. It usually does not produce obstruction because it is not likely to encircle the colon, the bowel content of this portion of the intestine is liquid, and there is a tendency for the lesion to

perforate and form abscesses. However, if the tumor is in a dependent or mobile segment of the colon, it is possible that volvulus of the bowel may be produced. In addition, if the lesion protrudes into the lumen of the colon, an intussusception may result. Eventually, ulceration and infection occur in all types of right-sided lesions. If perforation and extension of the growth through the wall develop, they are apt to occur at fixed points of the bowel.

Malignant tumors of the large intestine are usually of one of three types:

1. Adenocarcinoma, probably the most common.

2. Scirrhous carcinoma, the type seen so frequently in the left colon, rather infrequently in the right side of the bowel. Scirrhous carcinoma, because of its tendency to encircle the bowel, is often responsible for the development of obstructive phenomena.

3. Mucoid adeno-carcinoma or mucoid carcinoma constitutes about five per cent of all neoplasms of the colon. One can expect greater longevity, but greater eventual mortality, when dealing with lesions of the latter type.

SIGNS AND SYMPTOMS

Probably because of the nature of the nerve supply of the large intestine, and by virtue of its size—as to width of lumen and territory in the abdomen covered—pain rarely is at the site of the lesion. In the "silent" right colon, symptoms are rarely noted until considerable alteration in structure or function has occurred.

The pain of a lesion in the right colon may be cramp-like or aching and is frequently referred to the epigastrium. It is not the pain described in peptic ulcer, although it may simulate it. The mild dyspepsia that is sometimes seen in biliary disease is also sometimes observed in these cases. Obstructive phenomena are rarely noted.

The vague nature of the discomfort caused by carcinoma of the right colon and the manner in which this distress is referred to the upper abdomen is illustrated by the following abbreviated case history.

CASE HISTORIES

A woman, 61 years of age, had been in good health until January 1954, when she began to have intermittent pain in the right side and middle of the upper abdomen. The pain would last for a few hours at a time. It was observed once or twice a month and was not severe. In March 1954, the pain in the upper abdomen was present daily. Nausea was noted at times, but she did not vomit. Overeating would cause "gas." Daily stools were passed. There was no history of bloody or tarry stools. She had lost some strength and 12 pounds in weight since January 1954. X-ray examination of the gallbladder and an upper gastrointestinal series revealed no pathology in April 1954. An x-ray of the colon, taken the same month, showed a deformity of the ascending colon suggestive of neoplasm.

Carcinoma of the cecum was detected at an operation performed April 29, 1954. The terminal ileum, cecum, ascending colon, and the proximal half of the transverse colon together with the regional lymph nodes of these structures were excised. An end to end ileo-transverse colostomy was performed in order to

re-establish continuity of the bowel. She had an uneventful convalescence from the procedure, and she has remained well to date.

Anemia is another of the cardinal signs of malignant disease of the right colon. It may vary from a mild secondary anemia to an anemia so profound that the patient is unable to work. There often has been no evidence of loss of blood or other symptoms of debility. The following case report illustrates this point very well:

A woman, 43 years of age, began to feel "run down" in February 1954. She continued to tire more easily than formerly and by April 1954, she felt unable to do heavy work. Physical examination and blood studies revealed no abnormal findings except a moderately severe secondary anemia. On iron therapy and injections of liver extract, she began to feel better and during the next month the anemia improved, but the blood count never returned to normal. The benefit proved to be temporary. Weakness gradually returned in June 1954, and the secondary anemia became more pronounced than that noted in April. The patient was hospitalized and given a transfusion of blood. During the course of examination in the hospital, an x-ray of the colon revealed a filling deformity of the cecum which was thought to be due to carcinoma.

She was operated upon July 12, 1954, and a carcinoma of the cecum discovered. A right colectomy with end to end ileo-transverse colostomy was performed. The patient made a good recovery from the procedure and has no evidence of recurrence at this time.

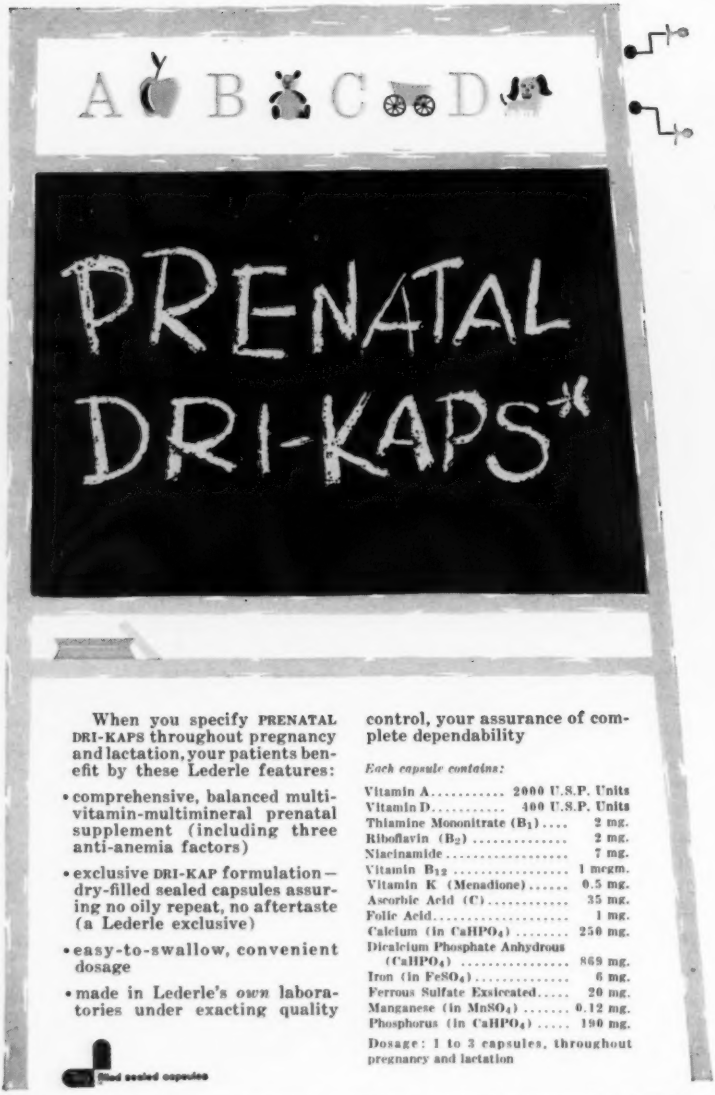
Not infrequently, the first sign of disease of the right colon is an accidentally discovered mass in this area. Due to the size of the lumen of the bowel, the tumor may reach considerable proportions before producing symptoms, as was true in the following instance:

In October 1952, a woman, 65 years of age, began to notice a degree of weakness that she had never had before. Her doctor found that she was anemic. An upper gastrointestinal series of x-rays taken in November 1952 failed to reveal a pathologic process. She was advised by her doctor to have an x-ray of her colon, which she refused. Her doctor treated her secondary anemia and her anemia improved. She felt so good that she did not see her doctor for several months. In July 1953, the patient began to tire easily again, but she still did not see her doctor until October 1953, when she discovered a mass in the right lower abdomen.

A large, non-tender, indurated, mass of irregular shape was found in the right lower abdomen. No pathologic process was detected in the pelvis. The abdominal mass did not originate from a pelvic organ.

Studies revealed 9 grams hemoglobin, 2,540,000 red blood cells, and 7,200 white blood cells. X-ray of the colon revealed a large filling defect in the ascending large intestine.

On October 20, 1953, a right colectomy was performed and the bowel re-united by an end to end ileotransverse colostomy in one stage. The pathologist reported the tumor of the right colon to be a diffusely infiltrating, rather undifferentiated neoplasm. In some areas the neoplasm cells secreted small amounts



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of mucin. In other areas there appeared to be an attempt at alveolar structure indicating the tumor was probably an adeno-carcinoma. At one site the neoplasm infiltrated entirely through the bowel wall to involve the attached mesentery.

While the patient made a good recovery from the operation, evidence of recurrence developed in April 1955, 18 months after her operation. She expired in July 1955.

Alternating diarrhea and constipation is sometimes seen in patients having malignant disease of the right colon. However, when present, the diarrhea is rarely severe. The stools may be loose, watery and contain mucus, but gross blood is an uncommon finding. Many of these symptoms are present in the following case history:

A woman, 69 years of age, began to pass loose stools in October 1952—one to four loose stools daily for seven to fourteen days. Then she would be constipated for three days to seven days. When the loose stools would start again, mucus and dark material suggestive of old blood would be noted in the stool. The patient had no abdominal pain. Her appetite remained fairly good and she had no history of indigestion. The patient observed some loss of strength, but no loss in weight at the time of her admission to the hospital January 7, 1953.

A small, firm, fixed, slightly tender mass was palpated in the right lower abdomen. The uterus was retroverted, but there were no other abnormal pelvic findings. Hemoglobin was 10 grams, red blood cells, 2,980,000. X-ray of the colon showed a filling defect in the cecal area.

On January 14, 1953, resection of the terminal ileum, ascending colon and proximal half of the transverse colon was done. A side to side ileotransverse colostomy was performed at the same operation. The patient recovered from the operation and has remained well to this time.

COMMENT

The pain in the first case was located in the upper abdomen. Some of the symptoms associated with gastric and biliary disease were present. However, it is well to remember that disease of the colon often refers discomfort to the upper abdomen. This has led to the saying that epigastric distress is more commonly due to disease of the colon than to disease of the stomach.

It is difficult to explain why the anemia occurs in patients with disease of the right colon. It is possible that it is due to some perverted function of the mucous membrane with increased absorption of toxins. However, in any differential diagnosis of secondary anemia, the possibility of a lesion of the right colon should be kept in mind. A carcinoma of the right colon may afford an increased surface of absorption and thereby account for the loss in weight and strength that some of these patients experience before any other evidence of disease is detected.

Increasing constipation, gross blood in the stools, indigestion and loss of strength and weight sometimes are the first complaints that direct attention to malignant disease of the transverse colon. However, a few patients do not seek consultation until a palpable mass has been detected accidentally. In short, most of the signs and symptoms that are seen in association with neoplasms

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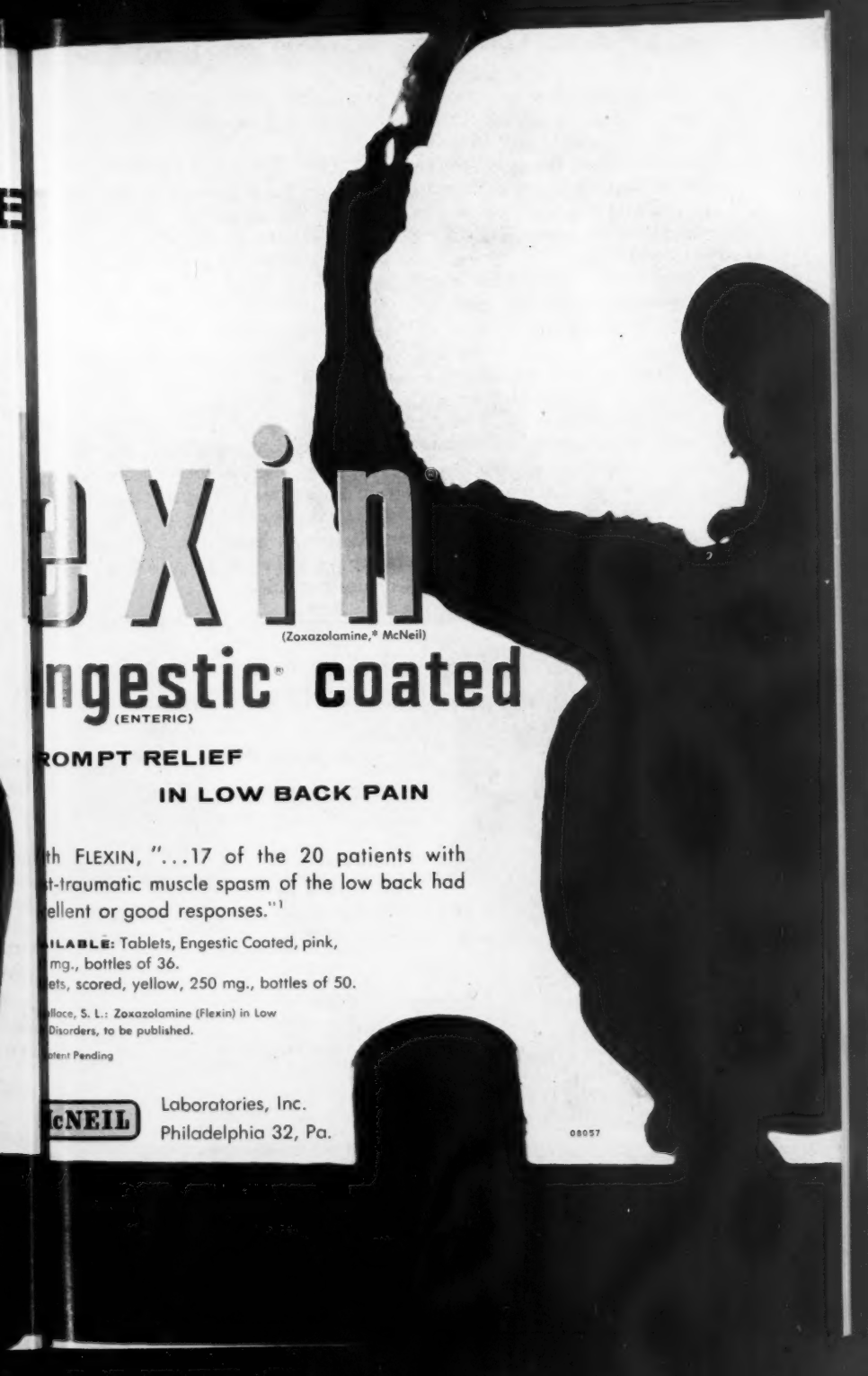

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of the right or left colon may accompany similar lesions in the transverse colon. Consequently, in passing from one side of the colon to the other, one sees a definite change in the signs and symptoms presented by a neoplasm in various portions of the large intestine.

It is important to emphasize that, if a diagnosis is to be made early in the course of malignant disease of the right colon, careful attention must be paid to the minor complaints produced by disorders of the right colon. It is true that most people who tire easily and suffer from vague dyspepsia do not have serious disease of the colon. But if the possibility of right-sided neoplastic disease of the colon is kept in mind, investigative studies will be carried out and a diagnosis made sooner than in some of the instances noted in this report.

SUMMARY

Due to the difference in the diameter of the colon, the character of the fecal content, and the nature of the neoplasms, the symptoms produced by lesions in the right half differ from those produced by growths in the left half.

The clues suggestive of malignant disease of the right colon are: vague dyspepsia, pain, anemia and a palpable mass. Careful consideration of the vague complaints associated with neoplastic lesions of the right side of the large intestine may be of great value in making an early diagnosis, which is essential if good results are to be obtained in treatment of the condition.

Differential Diagnosis of Breast Diseases

Palpation, transillumination, and x-rays are all valuable, but the only reliable diagnostic method is a careful microscopic study

GARLAND O. WELLMAN, M.D., F.A.C.S., *Texas City, Texas*

It has been stated by Rivers and Silverstein that a woman who enters a physician's office for the first time with complaints referable to her breast, and who has later been found to have cancer of the breast, will have a 10% chance of receiving erroneous advice and inappropriate treatment from the first physician she consults.[1] The importance of diagnosis before the appearance of classical signs of cancer is well-known to all doctors. With skin edema, nipple changes and/or axillary node enlargement, it is practically certain that the case is one of carcinoma of the breast. In the past few decades, doctors have begun to suspect cancer more and more on less and less evidence, and patients have been advised through a wide educational program to report to their physicians at the earliest sign of any change in the breast structure or function. This has brought an enormous increase in the number of women visiting their physician's office for breast examination, diagnosis and treatment. This puts a greater responsibility upon the physician first consulted by the patient.

The glandular tissue of the breast forms 15 to 20 lobes arranged radially about the nipple, each lobe having its own excretory duct which has an ampullary enlargement just beneath the areola. A considerable

1. Rivers, L. & Silverstein, J., *Surg. Clin. of North America*, 32:205-216, 1952.

amount of adipose tissue fills out the stroma between and around the lobes. The connective tissue stroma in many places is concentrated into fibrous bands which course vertically through the substance of the breast, attaching the deep layer of the superficial fascia to the corium of the skin. Each lobe of the breast consists of many lobules, connected by areolar tissue, blood vessels and ducts. The lobules consist of a cluster of rounded alveoli which open into small lactiferous ducts, that unite to form larger ducts, then a single canal for each lobule.

In painful affection of the breast, the pain may be referred to the side of the chest and back, along the intercostal nerve trunk, over the scapula, along the medial side of the arm, along the intercostal brachial nerve or up into the neck.

PATHWAYS OF THE LYMPHATICS

The lymphatics of the breast are many. There is a rich plexus in the skin of the areola and nipple which empties mainly into a subareolar plexus. Deep lymphatics arise in the spaces around the alveoli in all parts of the gland. They anastomose freely with the cutaneous lymphatics, and most of them converge towards the nipple where they join the subareolar plexus. From these the main lymphatics course outward along 8 principle pathways:[2]

1. Axillary route, to the anterior pectoral nodes (low), central axillary nodes (mid), to subclavian nodes (high or apex).

2. Along the internal mammary artery to the mediastinal nodes.

3. Paramammary route, through the abdominal lymphatic to the subdiaphragmatic nodes.

4. Groszman's path from lymphatics beneath the breast perforating the pectoral major muscle to Rotter's nodes, then to subclavian nodes.

5. Cross mammary pathway via superficial lymphatics to the opposite breast.

6. Substernal pathway to the mediastinal nodes.

7. Subclavian pathway direct to the subclavian nodes.

8. Lower superficial pathway to the lymphatics of the abdominal network.

These breast diseases appear to fall under two main categories. The non-neoplastic group includes such entities as fat necrosis, plasma-cell mastitis, chronic-cystic mastitis, Schimmelbusch's disease, endocrine disturbances and other non-specific lesions. The second group is made up of the true neoplastic lesions, benign and malignant. In diagnosing a breast lesion, one must consider the history very carefully. The use of inspection, palpation, transillumination, x-rays and aspiration of cystic masses are all valuable. However, microscopic study is the only reliable basis on which to *establish* the diagnosis.

DIFFERENTIAL DIAGNOSIS

The age of the patient, whether the lesion is single, multiple, or diffuse, the location of the lesion, its characteristics on palpation, the presence or absence of inflammatory sings and evidence of injury—these considerations limit the number of possibilities to be considered in the differential diagnosis. Dawson observed that cancer was seven times as common as benign lumps in the breast of women over 50, whereas

2. Geschichter, C. F. & Copeland, M. M., "Diseases of the Breast," J. B. Lippincott Company, 1945.

before 40, the reverse was noted.[3] During the ten-year period between these dates roughly corresponding to the menopause, benign and malignant lesions occur with about equal frequency. We have all seen malignant lesions in the breast in the second or third decade of life; so it is unwise to think any patient too young to have cancer of the breast. A relation to childbearing is found for acute and chronic forms of lactation mastitis, galactorrhea and galactocele, and the rapidly growing fibroadenomas and cancers of pregnancy.

At the menopause, large fibroadenomas or giant myxomas may appear, also dilated ducts beneath the nipple with inspissated secretion, papillomas beneath the nipple with bloody discharge, solitary cysts, and the various forms of mammary cancer.

CHARACTERISTICS OF MAMMARY LESIONS

Most mammary lesions are solitary, few are bilateral or diffuse. Mammary hypertrophy in the male and female is diffuse and often bilateral. Among the types of mammary dysplasia or cystic mastitis, adenosis is most often a multiple and bilateral condition. Cystic disease is multiple and bilateral in some instances, and small intracystic papillomas may occur in multiple form and may be bilateral. Dilated ducts with inspissated secretions are often multiple and may be bilateral. Recurrent mammary cancer may give rise to multiple nodules (carcinoma en cuirasse). Large fibroadenomas during adolescence, giant myxomas, and large mammary cancers and sarcomas may occupy the entire breast and give the impression of a diffuse lesion.

Most mammary lesions are found in the glandular tissue in any of the various portions of the breast. A few have a characteristic location beneath the nipple. Such lesions are papillomas in the large ducts, dilated ducts beneath the nipple, Paget's cancer of the nipple and some forms of papillary cancer and duct cancer.

DISEASE ENTITIES

Discussion of the disease entities of the breast will be confined to a few of the less common ones, and—in greater detail—the group classified as chronic mastitis and tumors, both benign and malignant.

Chronic cystic mastitis

I prefer to call this condition involution cysts or cystic diseases of the breast. Some of the terms suggest an inflammatory, others a neoplastic process; neither is the important element here. The breast is being continually acted on by a variety of stimuli which tend to induce hyperplastic changes followed later by involution. All the changes characteristic of hyperplasia and of involution may be duplicated in chronic mastitis (lobular hyperplasia). Microscopically, we see a picture of hyperplasia with or without involution.

The patient complains of pain or a lump in the breast. The pain, although usually slight, may be severe, is often worse at the menstrual period, and frequently is neuralgic in nature. The breast is tender, especially at certain points. One or both breasts may be involved, and there may be more than one lump in one breast. This multiplicity is strong evidence against cancer. In the thin person, this cystic involu-

3. Dawson, E. K., *Edinburg M. J.*, 50:721-736, 1943.

tion imparts a hard and coarsely granular character to the breast. The induration is frequently confined to one of the sector-like lobes of the breast, whereas in cancer no such restriction is observed. Regional lymphadenopathy is not evidence of a malignant process. This process is seen more often in the breast which has never lactated. By far the most common type of cyst is the Bluedome cyst of Bloodgood—smooth with a fluid content clear or cloudy, never hemorrhagic. Hemorrhage into a cyst suggests carcinoma.

When a woman visits a physician's office and presents such a picture, the only advice that should be given to her is that surgical biopsy and microscopic study be done. In case a benign process is reported, she should be advised to have regular examination of her breast at least every six months until she passes the menopause. The tendency is to regard cystic mastitis as a dangerous and precancerous condition.

HORMONES

We must remember that this hyperplasia is the result of hormone stimulation, and that, at least in the experimental animal, carcinoma of the breast can be induced by means of estrogenic hormones. I do not believe that cystic involution itself is necessarily a precurser of cancer, but that the breast in which the disease process occurs is more susceptible to the future development of malignant processes. These patients should be thoroughly instructed as to future care, so that they may not assume that anything that would develop in the breast in the future would be due to cystic mastitis.

Shields Warren gives the follow-up results after five years on the 1200 patients with chronic mastitis who have been operated upon, and compares them as regards cancer incidence with a control group of corresponding age.[4] He finds that the cancer rate for women with pre-existing breast lesions is 4½ times as great as for the controls; between the ages of 30 and 40, it is nearly 12 times as great. Warren concludes that a woman who has had chronic mastitis is in far greater danger of developing cancer, even though all the apparently abnormal tissue has been removed; but, once she is past the menopause, there is no greater danger than in any control group.

FAT NECROSIS

Destruction of fat followed by regenerative processes in which phagocytosis and foreign body giant cells are prominent may occur in the breast with a variety of conditions such as abscess, benign and malignant tumors, and following trauma; it may be confused clinically with carcinoma. This usually appears as a small dense nodule and may show fixation to the skin and induration suggesting cancer. Microscopic sections of some of these will show cystic cavities with cholesterol crystals and calcinous deposits. These give the lesion its hardness to palpation. A fibrous repair easily explains the skin retraction as it acts like a strong cord which is non-elastic and tends to retract.

PLASMA CELL MASTITIS

This rare condition is rapid in onset and displays local tenderness, with a purulent discharge from the nipple together with mild fever and

4. Warren, S., *Surg., Gynec. & Obst.*, 71:257, 1940.

leukocytosis. Adair describes it as periductal mastitis arising in association with dilated ducts beneath the nipple.[5] Because of the induration and edema of the skin, retraction of the nipple may occur. Usually the symptoms and signs increase in severity over a considerable period of time, to be followed by slow resolution, leaving an indurated nodule. One of the most characteristic findings is of one or more tense bands or cords, which are distended ducts, traversing the inflamed area, from which a thick dark discharge may be expressed on pressure. The microscopic picture is one of subacute inflammation with plasma cells predominating. Giant cells may be numerous also.

SCHIMMELBUSCH'S DISEASE (ADENOSIS)

Adenosis, more characteristically seen in the small, firm breasts of childless women in the late 30's or early 40's, is characterized by the occurence in one or both breasts of multiple small nodules usually around the periphery of the upper or outer hemisphere of the breast. These patients often give a history of being irritable, underweight and having irregular menstrual cycles.

The pathology of this condition was first described by Schimmelbusch as papillary cystadenoma, and he believed it to be a precancerous lesion. In 1906, Bloodgood described it as the "diffuse noncapsulated cystic adenomatous type" of chronic cystic mastitis. Other descriptive terms are "shotty breasts," "the feeling of a bag of shots," and "palpating a bean bag."

Pathologically, there is a decrease of adipose tissue and increase of fibrous tissue. In the parenchyma are many small cysts, minute adenomas, papillomas, and large dilated ducts. Microscopically,[6] the salient features are:

1. Epithelial proliferation in the terminal mammary tubules with the formation of multiple small intraductal adenomas and papillomas—intraductal hyperplasia.
2. A disorderly proliferation of acinar elements which invade the surrounding stroma, so-called "epithelial spilling."
3. Dilation of terminal tubules or acini with the formation of minute cysts—microcystic disease.
4. Increase in the periductal and perilobular stroma—diffuse fibrosis.

BENIGN TUMORS OF THE BREAST

Of the true tumors of the breast, 95% fall into the two groups, fibroadenoma and carcinoma. The fibroepithelial breast tumors are essentially fibroepithelial overgrowths limited by capsule. In some cases, the fibrous element is predominant, in some the epithelial. The development of cysts will materially modify the character of the tumor. These typically are seen as pericanalicular fibroadenoma, intracanalicular fibroadenoma, and duct papilloma; but these cannot be differentiated clinically. These tumors are more commonly seen in the well-developed, firm, virginal type breast and in the age range of 21 to 25 years. In the duct papilloma, the actively growing element is epithelium, while in the pericanalicular and intracanalicular fibroadenoma, the actively growing element is fibrous tissue. The duct papilloma which is usually close to the nipple often produces a bloodstained or serous discharge

5. Adair, F. E., *Arch. Surg.*, 26:735, 1933.

6 Geschichter, C. F. & Copeland, M. D., "Diseases of the Breast," Philadelphia, J. B. Lippincott Company, 1945.

from the nipple.

The only recommended treatment for these tumors is surgical removal and microscopic study.

MALIGNANT TUMORS OF THE BREAST

The discussion of this group of tumors could almost be covered by saying that they should all be removed surgically, and frozen section examination of the tissues done immediately. The patient should be instructed that she has a tumor of the breast which may be malignant. It should be explained to her that a thorough investigation, which includes x-ray examination of the chest and any other diagnostic procedure thought advisable will be made; and if no evidence of tumor can be elicited beyond the breast and axillary tissue, she should undergo a radical mastectomy immediately after receiving the diagnosis of malignancy from the frozen section examination. It is to the patient's advantage that this operation immediately follow the biopsy procedure. A delay of a few days in doing the radical mastectomy should be avoided if at all possible.

It will help in diagnosing a breast tumor if we keep in mind that mammary cancers are of two fundamental pathological types; adenocarcinomas, arising from the lobular structures and growing either in an infiltrating or a circumscribed fashion; and the stratified epithelial cancers, derived from tissues concerned with the development of the nipple and larger ducts. The adenocarcinomas, or gland-cell cancers, comprise 90% of cancers of the breast. Of this group, 75% are infiltrating adenocarcinomas, the remainder comedo carcinomas, papillary adenocarcinomas, gelatinous or mucoid adenocarcinomas.

The stratified epithelial cancers are derived from epithelium, and include Paget's cancer of the nipple, large-cell or Pagetoid duct cancer, so-called medullary cancer and cancer cysts.

Other neomammary cancers are the intramammary stratified epithelial cancers, sweat-gland cancers and circumscribed epidermoid cancers. There is also the group of mammary sarcomas which make up only a small portion of the total number of breast tumors. The pathological variety of these sarcomas is great, and the reader is referred to any standard pathology book for further descriptive details of these tumors as well as the other malignant tumors mentioned.

The most important information to be derived from such a paper as this is that no doctor's diagnostic acumen can ever be so accurate that he will correctly diagnose every cancer in all cases. Therefore, it behooves us as physicians and surgeons to recommend the safe procedure of surgical biopsy to all women who have tumors in their breasts. By adopting this plan and sticking to it, we can save many lives, and prevent great anguish and pain.

Hope and Help for the Hemiplegic

Methods to assist in the process of retraining and re-adaptation are outlined for use in the hospital and home; treatments with steroids and anticoagulants are discussed

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The modern doctor *treats* hemiplegia. No longer is the stroke victim relegated to an existence in a wheel-chair or bed. Today the hemiplegic whose physician institutes an active and individualized program of rehabilitation has a 90% chance within one year of self-care, ambulation and urinary and bowel control; and a 30% chance for useful employment.[1]

Despondency following in the wake of the paralyses, the speechlessness and the complete dependency, stifle the will or drive for recovery—possibly the greatest obstacle in the retaining of the hemiplegic. The philosophy guiding the re-adaptation program utilizes and develops the patient's remaining and potential physical and mental *abilities* while de-emphasizing the more obvious and immediate *disabilities*.[2]

Not all hemiplegics are capable of rehabilitation. Restitution of function may be slight in patients of advanced age, with severe mental derangement, with malignant hypertension and nephritis, with intractable heart failure or advanced coronary artery disease. Since only a small number of stroke patients fall into one or the other of these categories, 90% of hemiplegics are capable of varying degrees of rehabili-

*Department of Physical Medicine and Rehabilitation, Germantown Dispensary and Hospital.

1. Covalt, D. A., *Ann. Int. Med.*, 37:940, 1952.

2. Rusk, H. A., *Postgrad. Med.*, 15:347, 1954.

tation.[3]

Prognosis for retraining depends also on the cause of the cerebro-vascular episode. More recovery can be expected in cases caused by embolism than by thrombosis; and more in cases of thrombosis than in cases of hemorrhage.

Covalt[1] observed that ability to raise the paralyzed leg one inch off the sheet, or to move the affected arm but slightly, is assurance of eventual walking. Very slight flexion of the fingers of the paralyzed hand, during forceful closure of the non-paralyzed hands, frequently predicts some eventual return of function to the paralyzed hand and arm.

Treatment of hemiplegia from whatever cause should be started as soon as possible after the emergency state is passed—in thrombosis and embolism while the patient is still unconscious; in hemorrhage after five to seven days.

PASSIVE MOTION EXERCISES

Initial attempts aim at prevention of contractures about the joints. Arms and legs of the paralyzed as well as the "good side" are moved through their normal range of motion for four or five excursions, four to six times daily. Adduction deformity of the arm can be prevented by keeping a pillow in the axilla during sleep and between manipulations.

Early arm exercises reduce the incidence of stiff and "frozen" shoulders. These also prepare the arms for their part in ambulation and the activities of daily living. Foot-drop and other foot deformities are lessened by range of motion exercises of the lower extremities; foot-boards keep the weight of bed covers from the foot. Outward rotation of the paralyzed leg, alone or in combination with foot-drop, makes ambulation difficult if not impossible. This deformity can be prevented by placing sand-bags on the outer side of the thigh.

VOLUNTARY ACTIVE EXERCISES

While passive motion initiates the program of exercises, as soon as possible voluntary effort on the part of the patient is instituted. Oversolicitation should be avoided.

Active exercises start by the patient grasping the paralyzed wrist with the sound hand and extending the arm above the head. This exercise may be enhanced by the use of a rope threaded through a pulley, screwed into the top of the door. One end of the rope is tied to the paralyzed wrist, the other end is pulled on with the good hand thus elevating the paralyzed arm above the head.

Flexion and extension of the muscles of the fingers and other parts of the paralyzed hand by the non-affected hand must be done frequently by the patient; these exercises may be aided by squeezing a rubber sponge or "crazy putty," or crumbling up a newspaper sheet. Severe or persistent wrist-drop may be corrected by using a well-padded cock-up splint, worn especially during sleep.

While the patient is confined to bed, special attention is directed to the prevention of decubitus sores by frequent changes of position, smoothing the bed-clothes and careful skin hygiene.

Usually on the second or third day following hemiparesis resulting from embolism or thrombosis the pa-

3. Mackmull, G., *Pennsylvania M. J.*, 59:444, 1956.

tient is first sat up in bed, and later with legs over the side. The following day, with adequate help, the patient is supported on his feet for several minutes. Contact with the floor initiates a reflex which usually permits weight bearing on the paralyzed leg. Bowel and bladder control are almost impossible until the patient is semiambulant or at least able to stand. In cases in which standing with support is impossible, the patient is strapped in a standing-board once or twice daily for five to twenty minutes.

WALKING EXERCISES

Walking without assistance is the ultimate goal. In a hospital, parallel bars are used; in the home, a person on either side of the patient, or a heavy non-tilting chair on either side of the patient assist in the initial stages of ambulation. A "walker" is not used because we feel that it delays independent ambulation. At first the patient stands with support; after a sense of balance is established, steps are taken.

From the first, the reciprocal hand-foot pattern of walking is insisted upon, namely the forward movement of left hand and right foot simultaneously, then the right hand left foot.[4]

Flaccidity of the forearm and hand during walking exercises may necessitate tying the affected hand loosely to the parallel bar on which it slides during the exercises. When the patient has no further need for bilateral support, a flaccid forearm may require an arm sling to prevent flailing of the arm during walking, as well as relieving weight from the shoulder.[5] The additional assurance of a cane is permissible at this stage. Crutches should not be used.

In the absence of foot-drop, the patient can obviate the tendency to the rotating, adducted hip gait by flexing the thigh and bending the knee as the paralyzed foot is brought forward. Thus the foot clears the floor without swinging the leg outward. In case of foot-drop, a short leg-brace with a 90° stop favors the development of good walking habits.

Gait training requires proper shoes. Feet should be reasonably free of corns and callouses. Shoes but not bedroom slippers should always be worn during the ambulation sessions.

All efforts aim at regaining a pattern approaching that of normal living. Along with efforts at muscle reeducation and ambulation, tasks and skills which constitute the activities of daily living—toilet training, self-feeding, getting in and out of bed or wheel chair, etc.—are taught. In cases when walking has proven to be beyond the physical capacity of the patient, an effort is made to make the patient self-sufficient in a wheel-chair.[6]

Aphasia as a complication is treated concurrently with the other motor and sensory disabilities. Instructing the aphasic patient to answer with head-nods maintains his human contacts. Vocal efforts, even though they produce unintelligible sounds, are better than withdrawn silence. More protracted aphasic difficulties require specialized efforts at retraining.

ADJUNCTS IN THE AFTER-TREATMENT OF THE HEMIPLEGIC

The greatest hindrance to rehabilitation is the lack of motivation

4. Deaver, G. G., *Rhode Island M. J.*, 34:421, 1951.
5. Treanor, W. J., et al., *U.S. Armed Forces M. J.*, 7:179, 1956.
6. Wright, I. S., et al., Cerebral Vascular Diseases, Grune and Stratton, 1955.

for recovery, which is more prevalent in the older patient or in the persistently aphasic one.

Cortisone and hydrocortisone are employed to great advantage providing psychomotor stimulation, increasing or creating a sense of well-being, dulling pain and retarding fibrous tissue formation. Hemiplegics receiving these drugs respond to therapy with less spasticity and edema of the extremities and are motivated to attempt cheerfully the tedious retraining program. Contraindications to the use of these drugs in hemiplegia are the usual ones for the steroids.

One method employs hydrocortisone in doses of 200 to 300 mg. daily in four divided doses, orally or parenterally. After several days the dosage is decreased to maintain the patient on 50 to 100 mg. daily. Therapy can continue for four to six weeks.[7,8]

Delta hydrocortisone (Delta Cortef) may be substituted. The starting dose of 5 mg. four times daily is reduced after several days to 10 to 15 mg. daily. This therapy can continue during the entire period of retraining. It has proven to be of great help.

Anticoagulants should be used more frequently in the treatment of hemiplegia due to thrombosis and embolism, thereby hastening re-canalization of thrombosed vessels.[9,10]

The process of rehabilitation of the hemiplegic, while tedious, long and concentrated, is certainly rewarding. Until such time as cerebrovascular episodes are no longer classified as "accidents," muscle re-education and general readaptation of the patient to his limitations are the only hope which can be offered the stroke victim.

A plea is made for physicians to give their hemiplegic patients all the advantages of a program of vigorous rehabilitation.

7. Sheely, R. F., et al., *J.A.M.A.*, 158:803, 1955.
8. Russek, H. I., et al., *J.A.M.A.*, 159:102, 1955.
9. Wright, I. S., et al., *Med. Clin. N. Am.*, 34: 1950.
10. Wright, I. S., et al., *Ann. Int. Med.*, 41:668, 1954.

Childhood Obstructive Uropathies

Minimal symptoms and findings are often characteristic of these conditions, and they frequently will present a serious diagnostic problem

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Renal dysfunction in children occasioned by congenital obstructions of the urinary tract occur more frequently than is generally appreciated. This fact is occasioned by two facts:

1. The process is usually insidious.
2. The symptoms may not be directly referrable to the urinary tract.

The more common congenital obstructive uropathies are discussed here, as this important group often goes unrecognized until irreparable renal damage occurs.

The common obstructive conditions of the urinary tract are: ureteropelvic constrictions, duplications of the ureter with associated ureteral obstruction, ureterocele, vesical neck and posterior urethral abnormalities and urethral meatal stricture. Hydronephroses associated with neurogenic dysfunction of the upper urinary tract will not be discussed.

Ureteropelvic narrowing producing dilation of the renal pelvis and calyces is the most common anomaly of the urinary tract. Congenital obstructions of the ureteropelvic junction with renal destruction are often insidious in their progress and cause vague symptoms which may or may not be referrable to the urinary tract, which accounts for many of these kidneys being destroyed before the diagnosis is even suspected.

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Hence, whenever symptoms incriminating the digestive system can not be explained by abnormal findings in that system, an investigation of the urinary tract is mandatory. Many useless abdominal laparotomies will be avoided if this plan is followed.

A unilateral hydronephrosis characteristically should produce back or flank pain, with or without abdominal radiation. Flank tenderness may be moderate or absent, and a mass may or may not be felt, depending upon the size of the kidney and the nutrition of the patient. In infants and young children, an intermittently palpable mass in the flank or upper abdomen is suggestive of erratically draining hydronephrosis. There may be abdominal tenderness and occasionally unilateral rectus muscle spasm.

Studies of the urine and blood, except in instances of urinary infection, are not revealing and offer no diagnostic assistance. The diagnosis more often than not depends upon radiological evidence of renal dilation or, in advanced cases, evidence of renal failure.

RETROGRADE UROGRAMS

Excretory urography may demonstrate an enlarged kidney with blunted calyces and a dilated renal pelvis, without evidence of the normal pelvic funnel, or indeed any kidney at all, if the functional capacity does not permit secretion of the radio-opaque iodide. In this latter instance, the diagnosis is dependent upon retrograde urography. It is axiomatic that every case of ureteropelvic obstruction must be studied by retrograde urograms in order to determine renal function and the precise location and extent of the ureteropelvic stricture. Without this information, intelligent corrective surgery is impossible.

It is important enough to state again that any abdominal complaint that can not be explained by digestive tract studies must be considered to be of urinary tract origin until proven otherwise. Furthermore, a normal urine does not necessarily rule out serious urinary tract pathology.

URETERAL DUPLICATION

Partial or complete ureteral duplication, which is always associated with some degree of renal duplication, is not uncommonly accompanied by progressive hydronephrosis of one segment (usually the upper) of the duplicated kidney. These obstructions are occasioned by one of two mechanisms:

1. Ureteral narrowing at the site of ureteral anastomosis in partial ureteral duplication.

2. In complete ureteral duplication at the site of ureteral cross-over where the ureter of the upper portion of the duplicated kidney entwines the ureter of the lower renal segment.

Back or flank pain may be prominent in these patients, but much more frequently pyuria, with or without systemic manifestations, is the initial finding. The degree of pyuria is not diagnostically significant.

If renal destruction is advanced, excretory urography may not visualize the affected renal segment. This fact may confuse the uninitiated; however, if it is remembered that normally the left kidney lies more cephalad than the right and that any variation of the renal axis suggests

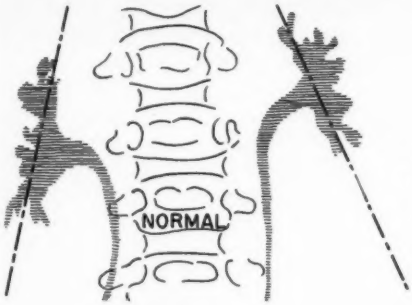

FIGURE 1.

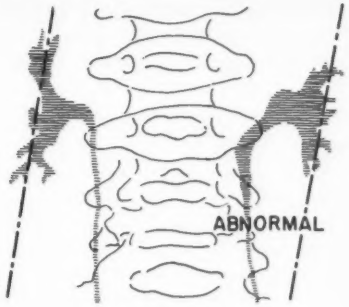

FIGURE 2.

pathology, a diagnosis can often be made.

The most important observation in the routine reading of pyelograms is the observance of the renal axis. The renal axis is demonstrated by drawing a straight line connecting the most inferior and superior calyces (Fig. 1). Normally this line, when extended cephalad, passes through the thoracic spine, but, if this line runs parallel to or courses away from the spine, renal duplication must be suspected and urographic studies must be initiated to establish a positive diagnosis.

In the event of segmental destruction in renal duplication, heminephrectomy and an associated ureterectomy is indicated. In partial renal dysfunction, corrective surgery may afford a solution and re-establish kidney function.

Ureterocele is due to a congenitally minute ureteral orifice with a resultant herniation of the terminal intravesical ureter into the bladder. This condition may be unilateral or bilateral, and the intracystic mass may vary in size from a small pea to that large enough to completely fill the bladder, rarely to protrude through the female urethra. Characteristically this cystic intravesical mass fills intermittently with each ureteral peristalic load of urine and, because the urine escapes slowly through the pin-point orifice, the mass either gradually disappears between periods of ureteral flux or simply becomes less tense.

We have here again the same clinical picture as previously described in hydronephrotic states; namely, flank or back pain, pyuria, urosepsis. Occasionally if the ureterocele is sufficiently large to obstruct the vesical outlet, the presenting symptom may be urinary retention.

If the ureteral musculature has not been destroyed through obstructive decompensation, the condition may be easily corrected by excising the thin-walled ureterocele, which automatically effects an adequate ureteral orifice. In older children and adults, this is easily accomplished with a resectoscope.

Bladder-neck obstructions in infants and children may be occasioned by several factors; i.e., fibrous neck contractures, muscular hyperplasia of the vesical neck, elevation of the interureteric ridge and poster-

ior urethral valves. The degree of obstruction determines the severity of the symptoms, but irreversible renal destruction may occur without disturbing or impressive symptoms. The incidence among males and females is the same.

The symptoms are those of voiding difficulties; i.e. urinary frequency, urinary difficulty as straining during voiding, intermittent dysuria, a varying degree of pyuria and enuresis. These symptoms may not be definite; often the parent alone is aware of these disturbances, and the physician, after studying a normal urine and talking to an anxious parent, sees no cause for alarm. It is well to heed the words of the fond parent. All of these children are entitled to an estimation of residual urine, regardless of ordinary laboratory and physical findings. Catheterize the child immediately after voiding, and, if more than 15 cc. of urine is found retained in the bladder, the child should have a thorough urologic survey. This is the only possible means to be sure that you will not see such a child a few months or years later in terminal azotemia.

The solution to these problems of bladder-neck obstruction is corrective surgery, which early in the process is totally curative. Later, it is possible only to halt the progression of renal destruction.

Urethral meatal stenosis is a congenitally small urethral meatus which in infancy may have suffered minor inflammatory lesions with additional contracture. Occasionally we see a urethral meatus so small as to cause difficulty in voiding. In serious instances, retrograde urethral, bladder, ureter and renal dilation may occur and, if not fatal renal dysfunction, a chronic recurrent pyelonephritis is not uncommon.

Under light anesthesia the urethral meatus is dilated until one jaw of a hemostat can be introduced into the urethra to a depth at which the opposite jaw tip reaches the frenum. The hemostat is then locked and the tissue between the jaws is crushed. The clamp is left in place for three minutes, and the crushed tissue is divided in its mid-line for a distance sufficient to afford a normal urethral meatal orifice (Fig. 2). The parent is instructed to separate the meatal edges twice daily to prevent fusion of the incised edges. After three or four days, there is a permanently normal urethral meatus.

New Tranquilizing Drugs

In general, indications for use of chlorpromazine, reserpine and meprobamate are the same as those for any other sedative. They are superior to other sedatives in that they seldom produce clouding of consciousness and are not habit-forming.

Meprobamate has the added advantage of being more uniform in its action, remarkably free from side reactions or toxicity and more effective for the relief of insomnia. It is a safe and effective tranquilizing agent for the relief of nervous tension, anxiety and insomnia.

Lemere, F., *Northwest Med.*, 54:1098-1100, 1955.

Treatment of Shock Accompanying Myocardial Infarction*

An analysis of the most effective methods which are now available to combat shock, and restore myocardial function to an optimal state

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INTRODUCTION

Shock is an acute medical emergency which occurs in 10% of all cases of infarction of the heart. While the mortality of acute myocardial infarction without shock is 21%, when shock occurred as a complicating factor, the mortality has been as high as 80%[1]. New agents introduced in recent years in the treatment of shock have reduced this mortality rate significantly. Griffith et al. showed that of 134 patients treated for shock by various means, 60 who received treatment within three hours had a mortality rate of only 13%; the remaining 74, who were similarly treated after three hours, had a mortality rate of 76%[2].

DEFINITION

For the purposes of this discussion, shock is considered to be present when, in a previously normotensive patient, the systolic pressure is 80 mm. Hg or below, accompanied by the signs of circulatory collapse

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1. Hellerstein, H. K., et al., *Am. Heart J.*, 44:407-427, 1952.

2. Griffith, G. C., et al., *Circulation*, 9:527-532, 1954.

such as cyanosis; cold, clammy, moist skin; rapid, thready pulse; and narrowed pulse pressure. In patients with pre-existing hypertension, the clinical syndrome of shock may be present when the systolic pressure is 100 mm. Hg or even higher.

PATHOPHYSIOLOGY

There is general agreement that the event leading to the shock state, in patients with myocardial infarction, is a reduction in left ventricular output, due to direct loss of functioning myocardium. Some have argued that vigorous treatment of the shock state is contraindicated, as hypotension is a compensatory mechanism which decreases the work of the damaged heart, and restoration of blood pressure to normal would increase the incidence of myocardial rupture.[3] However, from critical review of the pathophysiology of myocardial infarction and shock, it is evident that there is no physiologic reason for such a concept. The importance of maintenance of adequate blood pressure levels in minimizing the extent of myocardial injury is evidenced by the demonstration of a diminished coronary blood flow as well as accentuation of systolic "ballooning" of the ischemic myocardium during the shock state.[4] Further, since rupture secondary to myocardial infarction usually occurs between the fourth and eleventh day at the time when tissue necrosis has occurred,[5] and shock usually develops in the first few hours or days, this complication of restoring blood pressure to normal has probably been exaggerated.

TREATMENT

In the management of the patient with shock complicating myocardial infarction, the cardinal principle in therapy is to restore blood pressure as quickly as possible to levels that will provide optimum coronary blood flow and that will not excessively increase the work of the heart against pressure. The measures most satisfactory for accomplishing this are vasopressor agents and transfusion of blood or plasma. Adjuvant methods of treatment including oxygen, sedation, digitalis, and other general measures remain important additions in the therapy of shock.

VASOPRESSOR DRUGS

The agent which most nearly approaches the ideal pressor drug for the therapy of shock is norepinephrine, which increases blood pressure, peripheral resistance and coronary blood flow, tends to slow the pulse, and produces no significant increase in cardiac output. Results from its use indicate a small but significant reduction in the high mortality of this condition.[6-9] In most of the cases reported, pulmonary edema or congestive failure was not produced or aggravated by norepinephrine, and in some cases improvement of congestive failure was attributed to increase in heart contractile force.[7]

To administer norephinephrine (levophed bitartrate) one dilutes 4 c.c. levophed in 1000 c.c. 5% glucose in water, making a solution for intravenous administration containing 4 micrograms of norepinephrine per c.c. The rate of administration

3. Gilbert, N. C., *M. Clin. North America*, 28:1-15, 1944.
4. Corday, E., et al., *Am. Heart J.*, 37:560-581, 1949.
5. Wessler, S., et al., *Circulation*, 6:334-351, 1952.
6. Kurland, G. S., et al., *New England J. Med.*, 247:383-389, 1952.
7. Gazes, P. C., et al., *Circulation*, 8:883-892, 1953.
8. Miller, A. J., et al., *J.A.M.A.*, 152:1198-1201, 1953.
9. Sampson, J. J., et al. *Circulation*, 9:38-47, 1954.

is determined by the pressor response; frequent blood pressure determinations must be made until the desired pressure is maintained. Increasing the concentration of the norepinephrine to 8 micrograms/c.c. and even to 16 micrograms/c.c. may have to be resorted to for the desired blood pressure response. An immediate increase in blood pressure is usual; on premature withdrawal, the fall in pressure is also rapid. In the use of norepinephrine, emphasis should be placed on the necessity for titrating the patient's blood pressure, and on continuing to increase the concentration of the drug and/or the rate of administration until a satisfactory response is obtained. However, those patients who do not respond to concentrations of 16 micrograms/c.c., given at the rate of 40 to 50 drops/minute, usually prove to be unresponsive. In patients not responding to norepinephrine, the addition of blood or plasma is indicated in an attempt to restore blood pressure to normal.

OUT OF SHOCK

When blood pressure appears to be maintained, gradual withdrawal of the drug is indicated, checking carefully to see that blood pressure does not return to shock levels. Usually this can be accomplished within 24 hours. Care must be taken to prevent extravasation of the fluid outside the vein, as intense local reactions and sloughing may result.[6,10] Since this is least likely to occur in the arms,[6] the lower extremities had best be avoided if veins in the arms are available.

Mephentermine,[1] phenylephrine,[11] ephedrine sulfate,[12] paredrine,[13] and more recently, metaraminol[14] all of which may be administered intravenously or intramuscularly, have received clinical trial with varying success, but have received only limited use at this hospital. Epinephrine has no advantage over norepinephrine and has possible disadvantages as it tends to cause a greater increase in cardiac work.

TRANSFUSIONS

Since the circulating blood volume is not decreased in patients with myocardial infarction in shock, the elevation of blood pressure following transfusions probably is due to increased blood volume and ventricular filling with consequently increased stroke output. Whether or not the transfusion is effective in restoring blood pressure is then fundamentally dependent on whether enough functioning myocardium remains to respond to Starling's law of the heart. In view of this, vasopressor agents appear to be a more physiological approach to the problem of shock accompanying myocardial infarction; however, blood and plasma transfusions have been used extensively with good results in some patients, particularly when given early.[15] The usual rate of administration has been 2 to 4 ml. per minute (average of 200 ml. per hour) with a range of 60 to 500 ml. per hour.[16] In the presence of anemia, blood is the treatment of choice; otherwise plasma is preferred. As pulmonary edema is an expression of the inability of the left ventricle

10. Greenwald, H. P., et al., *New England J. Med.*, 246:252, 1952.
11. Gootnick, A., et al., *Circulation*, 7:511-522, 1953.
12. Levine, H. D., et al., *M. Clin. North America*, 37:955-970, 1953.
13. Blumgart, H. L., *J.A.M.A.*, 154:107-111, 1954.
14. Weil, M. H., *Am. J. M. Sc.*, 230:357-369, 1955.
15. Sampson, J. J., et al., *Am. Heart J.*, 38:54-68, 1949.
16. Hellerstein, H. K., et al., *Mod. Concepts Cardiovas. Dis.*, 20:104-107, 1951.

to expel blood adequately, this development contraindicates transfusion. The rate of administration is best controlled by a continuous recording of the venous pressure by a saline manometer connected through a 3-way stopcock system to the transfusion needle, which allows for repeated and practically continuous determination of venous pressure. If during the infusion, venous pressure becomes elevated, the transfusion should be stopped, as such a rise indicates an overload on the heart, with threat of failure. There is no superiority of the intra-arterial route over intravenous transfusion in restoring the blood pressure to normal.[17-21]

In those individuals with pulmonary edema, the application of tourniquets to the extremities to reduce venous return, and/or venesection removing 250 to 500 cc. of blood rapidly, may be indicated, in spite of the presence of shock. This acute reduction in venous return reduces the work load on the damaged left ventricle sufficiently in some cases to relieve the pulmonary edema.

DIGITALIS

If only minimal signs of congestive failure are evident, a mercurial diuretic, such as mercuhydrin or thiomerin, may be all that is necessary. However, if pulmonary edema becomes progressive, digitalization should be carried out. The usual digitalizing dose of lanatoside C, whose action is dissipated in 48 to 72 hours, is 1.6 mg. given slowly intravenously at one time. However, in patients with myocardial infarction and shock, we prefer to administer 0.8 mg. intravenously initially, then 0.4 mg. intravenously in one to two hours if no effect is evident, and 0.4 mg. in another one to two hours if necessary. If rapid intravenous digitalization with lanatoside C is used, then a longer-acting digitalis preparation, such as digitoxin or digitalis, should be started within six to twelve hours, at a dosage that will accomplish complete redigitalization in the next 24 to 48 hours.

OXYGEN

Oxygen therapy is advisable in all patients in shock accompanying myocardial infarction.[22] Inspired oxygen concentrations of 95 to 100% delivered by a closed mask will restore arterial oxygen saturation to normal, and increase the amount of physically dissolved oxygen in the plasma. Lower inspired oxygen concentrations of 40% to 50% such as can be delivered by either tent or nasopharyngeal catheter[23] may replace the mask after the first few hours following satisfactory response of the shock to therapy.

AGENTS USED IN COMPLICATING ARRHYTHMIAS

In general, patients exhibiting a persistent rapid ventricular rate of supraventricular origin should be digitalized, as previously discussed, in an effort to slow the tachycardia, unless carotid sinus pressure, sedation, etc. promptly lower the rate. On the other hand, ventricular tachycardia is a contraindication to the use of digitalis. This arrhythmia is best treated by the intravenous ad-

17. Aldrich, E. M., et al., Surgical Forum Am. Col. Surgeons, p. 503-507, 1950.
18. Case, R. B., et al., *J.A.M.A.*, 152:208-212, 1953.
19. Maloney, J. V., Jr., et al., *Surg., Gynec. & Obst.* 97:529-539, 1953.
20. Silber, E. N. et al., *J.A.M.A.*, 147:1626-1629, 1951.
21. Berman, E. F., et al., *Am. Heart J.*, 43:264-272, 1952.
22. Borden, C. W., et al., *J.A.M.A.*, 148:1370-1371, 1952.
23. Lambertsen, C. J., Pharmacology in Medicine, 55/3-55/19, New York; McGraw-Hill Book Company, Inc., 1954.

ministration of procaine amide (pronestyl), 50 to 100 mg. per minute until the rate is restored to normal. In most instances, no more than one gram will be required; occasionally higher dosages will have to be given. An ECG, using a direct writing machine, should be recorded almost continuously throughout the administration of this drug, which is to be stopped when conversion to the normal has been effected. Following this, 0.5 gm. pronestyl or 0.2 to 0.4 gm. quinidine orally every four hours should be given to prevent recurrence.

ANTICOAGULANTS

Anticoagulants should be given to all patients with shock accompanying myocardial infarction unless a specific contraindication to anticoagulant therapy exists. Heparin, and a longer-acting oral anticoagulant such as dicumarol are started simultaneously; the former drug is discontinued in 48 to 72 hours, when the action of dicumarol becomes manifest. Heparin dosage is 50 to 75 mg. intravenously every four hours, depending on the clotting time. Dicumarol is given orally—250 mg. on the first day, 150 mg. on the second day, and 100 mg. on the third day unless the prothrombin time is unduly elevated, when a smaller dose is given. The aim of therapy is to maintain prothrombin levels of two to two and one-half times the control prothrombin time, which usually requires 50 to 100 mg. daily.

GENERAL MEASURES

The apprehension and pain which often accompany myocardial infarction and shock is best treated by the slow intravenous administration of 10 mg. morphine sulfate, as absorption from muscle or subcutaneous tissue is uneven during the shock state. Unless large quantities of sodium are lost through vomiting or excessive sweating, sodium is best restricted during the initial stages of treatment because of retention of this ion in patients with myocardial infarction and shock.[24] Total fluid loss should be estimated and replaced—the oral route if this is feasible; if not, by the intravenous. In those patients exhibiting signs of pulmonary congestion and dyspnea, elevation of the foot of the bed to treat the shock is contraindicated; the best position is a moderate elevation of the head of the bed which will help relieve the dyspnea, without adding significantly to the severity of the shock.

24. Sampson, J. J., et al., Proc. First Internat. Cardiol. Congress, Paris, Vol. 2, 1950.

Brucellosis: A Still Prevalent Disease

Brucellosis is under-reported in the United States; it continues to be a problem. The use of antibiotics (valuable though they are), before the diagnosis is established, often has suppressed the evidence upon which accurate diagnosis otherwise could have been made. The diagnosis of chronic brucellosis must rest on clinical and laboratory study, often including psychiatric observation.

Harris, H. J., *The Merck Report*, 64:15-18, 1955.

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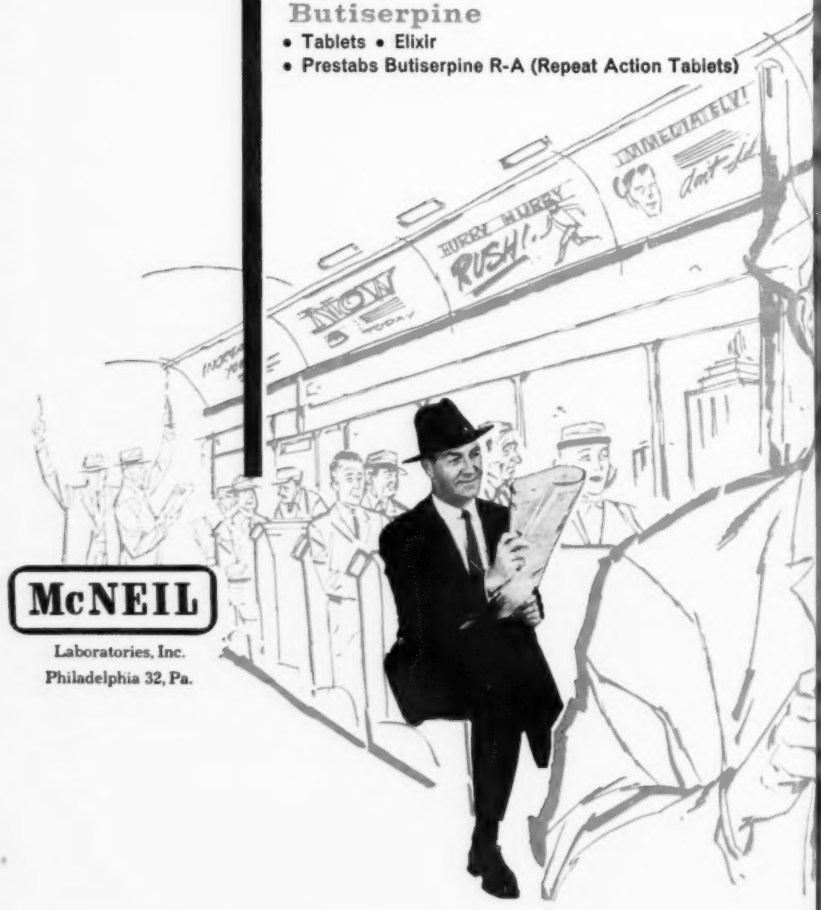

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Present Status of Carcinoma of the Lung

Curability of patients operated upon in the early phase of this disease is evidenced by the 70% survival rate following therapeutic resections in this series

EARLE B. KAY, M.D., & FREDERICK S. CROSS, M.D.,
Cleveland, Ohio

In an analysis of all hospital records at Charity Hospital in New Orleans from 1910 to 1952, Boyce found no instance of bronchogenic carcinoma from 1910 to 1927, 21 patients with this condition between 1928 and 1934, and the amazing increase in incidence between 1947 and 1952 of 942 patients.[1] Many other reports are of a similar nature but not quite so striking.

FACTORS CONTRIBUTING TO THE ETIOLOGY

There is no question that excessive smoking, the inhalation of certain irritant gases and the close contact with radioactive ores are predisposing factors in individuals who may have a hereditary predisposition to malignant tumors.

The educational and research efforts against this disease are becoming more and more effective and are beginning to bear fruit. Fewer persons are smoking, many are smoking less or have changed to filtered cigarettes—the safety of which remains to be proven. There is an individual variation in results of smoking, but if it can be limited to less than a package of cigarettes a day, it is likely that little correlation between smoking and the incidence of bronchogenic carcinoma would be noted.

1. Boyce, F. F., *Ann. Surg.*, 137:864, 1953.

how bioflavonoids with ascorbic acid help in threatened and habitual abortion...

Frequent nosebleeds, gum bleeding and easy bruising were observed in a high percentage of women who had repeated abortions, according to one study.[1]

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1. Scientific News Letter, March 1954.
2. Greenblatt, R. B.: Obstet. & Gyn. 2:530, 1953.

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CONTROL MEASURES

Industries are increasingly employing ventilation systems to remove irritant gases. Cities are doing more toward smoke control, and workers in radioactive ores are being better protected.

Physicians are becoming more and more aware of the prevalence of bronchogenic carcinoma, and the steps necessary for its early diagnosis. Mass roentgen surveys have proven the value of the routine chest x ray in detecting carcinoma. Any pulmonary lesion is now considered malignant rather than tuberculous until proven otherwise. All this is reflected in statistics. As recently as 1944, a report from Brompton Hospital in England showed that only 7.5% of 996 patients were seen early enough for the carcinoma to be resected.[2] In another report in 1946 by Ochsner, DeBakey and Dixon, of 2,034 patients collected from the literature, 86.6% were seen too late for surgical treatment.[3] Surgeons are now reporting an increase in the number of patients being seen early enough in their disease to allow resection.

RESULTS OF SURGERY

We present our experience of 667 carcinomas of the lung treated between 1946 and 1954 inclusive. The discussion is confined to 504 private patients of this group in whom the follow-up is complete. Group I includes 214 patients treated between 1946 and 1950; Group II deals with 290 patients treated between 1950 and 1954. There was an average duration of symptoms of six months in Group I, of four months in Group II. In Group I, 121 patients (57%) had obviously inoperable cancer when first seen for consideration for operation; 93 patients (43%) were explored; and 47 (22%) had pulmonary resections. There were nine postoperative deaths (19%), 8 of which resulted from cardiorespiratory and renal complications in poor-risk patients. In only 17 patients (36%) could the pneumonectomies be considered therapeutic. That is, so far as could be ascertained at the time of the operation, the carcinoma was limited to the lung, and there was no gross evidence of mediastinal glandular involvement.

In the other 30 patients (64%) upon whom pulmonary resection was performed, the carcinoma had either extended to the mediastinum or chest wall, or there was gross evidence of mediastinal lymph-node involvement. Three of the 17 patients who had therapeutic pneumonectomies died postoperatively. Of the remaining 14 patients, 10 (70%), were alive 5 to 9 years afterwards.

Growing awareness of this problem is shown by the fact that 290 patients with bronchogenic carcinoma were seen between 1950 and 1954. The exploratory rate has increased to 47% (137 patients) and the resectability rate has increased from 22 to 33% (96 patients)—an increase of 25% over that reported just ten years ago. It is most encouraging to note the increase in the number of resections considered to be therapeutic as contrasted to the palliative—from 36% in Group I to 53% in Group II.

The operative mortality has fallen from 19% in Group 1 to 12% in Group II. The operative mortality

2. Bjork, V. O., *Acta Chir. Scandinav.* (suppl. 123), 95:1-113, 1947.
3. Ochsner, A., et al., *Ann. Surg.*, 125:522-540, 1947.

following pulmonary resection is a variable factor dependent largely upon each individual surgeon. The technical factors responsible for postoperative deaths in experienced hands is a very small figure. The mortality rate is largely dependent upon how great a risk the surgeon is willing to accept for surgery in a patient who would die from his carcinoma unless surgical removal of the cancer is attempted. It is further encouraging to note that 42 patients in Group II are now alive from one to 4½ years following resection. These 42 patients would represent 44% of those having resection—82% of the therapeutic resections.

The results of pulmonary resection in cases diagnosed early enough to be resected are good enough to stimulate all physicians to take a very aggressive attitude in its early recognition.

EARLY DIAGNOSIS

Bronchogenic carcinoma may simulate chronic bronchitis, bronchopneumonia, virus pneumonia, unresolved pneumonia, pulmonary suppuration, tuberculosis, asthma, lung abscess, influenza, interlobar effusion, aortic aneurysm, lymphoblastoma, or cystic disease in its clinical manifestations; and it may be indistinguishable from any one of a number of them roentgenologically.

The classical signs, symptoms and roentgen manifestations of advanced bronchogenic carcinoma are familiar to all. Very few patients present a clear-cut picture early in the disease. Some patients have no symptoms referable to the chest.

Development, persistence, or exacerbation of an irritative cough may be the first and only sign or symptom of cancer, and not the result of a cold or smoking. Dyspnea and wheezing may be caused by partial bronchial occlusion by a tumor as well as by asthma. Bronchopneumonia or unresolved pneumonia may be caused by malignant bronchial obstruction, atelectasis and infection. Cavitation may be due to a necrotizing carcinoma or an abscess distal to an obstructed bronchus. If these possibilities are kept in mind, one will more likely recommend further diagnostic procedures in the attempt to determine the etiology.

MANAGEMENT OF SUSPICIOUS PULMONARY LESIONS

It is gratifying to note the increasing number of patients being referred for an opinion because fluoroscopic or routine x-ray examination of the chest, a routine x-ray survey for tuberculosis, or an employment film has divulged a suspicious appearing lesion in the lung fields. Some of the patients have chest symptoms too slight to have caused alarm. Others are entirely asymptomatic. As more and more of these routine x-ray examinations are made, the incidence of early diagnosis of carcinomas will increase. It is disappointing when an occasional patient with carcinoma of the lung so detected is followed unduly long because a definite diagnosis of malignancy was not established earlier.

Any lesion of the lung field is a dangerous lesion. There are methods which aid us in our attempt at a definite diagnosis of malignancy. If these are exhausted and the diagnosis still is in doubt, it is far better to perform an exploratory thoracotomy with resection of the lesion than to merely watch it grow.

DIAGNOSTIC PROCEDURES

The early diagnosis of bronchogenic carcinoma first depends upon the realization of the possible significance of the chest symptoms. Initially, there may be no symptoms or perhaps only a mild irritative cough, slight hemoptysis or a "chest cold." The physical examination of the chest may or may not show any abnormality. In any case, an x-ray examination of the chest should be obtained. This may or may not be diagnostic of malignancy.

Even though the first x-ray examination is negative, if the symptoms persist, a second x-ray examination should be obtained within a month's time, and an examination with the bronchoscope should be made. A number of patients have been seen with advanced bronchogenic carcinoma who have had "normal" chest x-rays two to four months previously. Persistence of an irritative cough, or hemoptysis, is justification for a bronchoscopic examination, even though the roentgenogram of the chest is either essentially normal or not definitely diagnostic.

BRONCHOSCOPIC VISUALIZATION

Sixty to 70% of bronchogenic carcinomas arise in the main bronchi. These usually can be visualized bronchoscopically and a biopsy performed. Tumors arising in the periphery of the lung or in the upper-lobe bronchi may be beyond bronchoscopic vision. Visualization of the bronchial tree by the instillation of iodized oil is rarely of any value in the diagnosis of carcinoma, and it may be misleading. The reaction may make the interpretation of subsequent x-ray examinations difficult unless water-soluble contrast media are used.

Lateral and oblique roentgenograms must be made. Inspiratory-expiratory views are important in demonstrating obstructive emphysema in patients with a wheeze. Laminograms are frequently of value in demonstrating bronchial obstruction and often show considerable detail of the tumor mass—of particular value in upper-lobe lesions where the tumor cannot be visualized bronchoscopically.

The careful cytological examination of bronchial secretions and bronchial washings for tumor cells by the Papanicolaou technique is becoming increasingly valuable. This examination may be without value in the early, dry, peripheral tumor.

Over 50% of patients in early bronchogenic carcinoma have what appears to be either an upper respiratory infection or pneumonia. The importance of the "check-up" x-ray examination in pneumonic lesions, in spite of clinical improvement, should be emphasized. Every case of bronchopneumonia should be followed to complete resolution by repeated x-ray examinations.

If the "pneumonic" lesion persists for longer than several weeks, cancer or some other complication should be strongly suspected. Dramatic clinical and x-ray improvement of a pneumonic lesion with the use of antibiotics does not eliminate the possibility of carcinoma. If any abnormality whatsoever persists in the roentgenogram, one should suspect cancer. Too frequently, valuable time is lost while a cancer is masquerading under the diagnosis of "virus pneumonia," "unresolved pneumonia," "chronic pneumonitis" or "residual pleural thickening."

If there is reasonable suspicion that a carcinoma exists after all the diagnostic and therapeutic measures have been used, bacteriological studies have eliminated tuberculosis, and response to an intensive course of antibiotics in the infectious group has not been complete, then exploratory thoracotomy is mandatory without further delay. Diagnosis and observation should require no more than a few weeks. Any delay may make the difference between an operable lesion and one that is inoperable. The diagnosis of carcinoma of the lung depends upon the correlation and interpretation of the clinical, roentgen, bronchoscopic and laboratory findings.

Early manifestations of bronchogenic carcinoma are:

THE NEGATIVE CHEST

The roentgen shadow cast by a neoplasm consists mainly of the secondary manifestations of the tumor —atelectasis, infection and edema. At an earlier period, bronchial neoplasm will cause no change from the "normal" roentgenogram. During the early phase, the only clue may be a persistent cough, wheeze or hemoptysis. These are indications for a bronchoscopic examination even though the roentgenograms may be normal.

OBSTRUCTIVE EMPHYSEMA

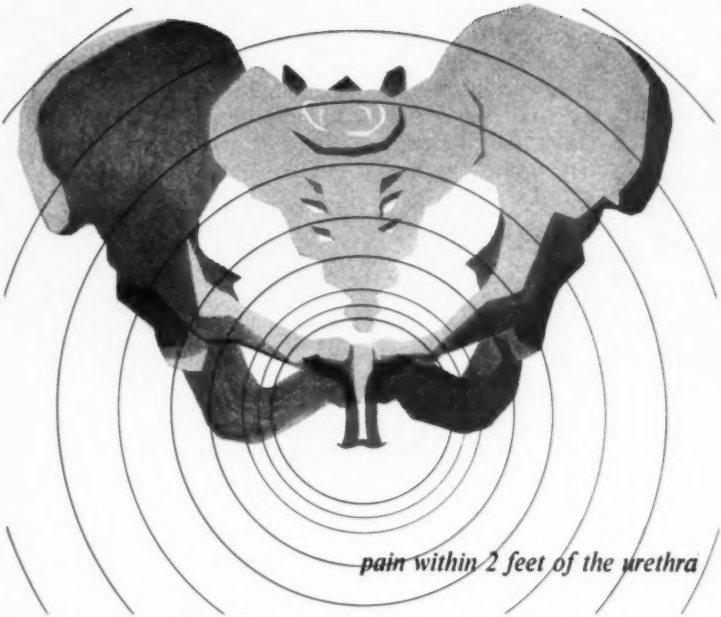
As the bronchogenic carcinoma grows, it first causes irritation and then partial obstruction. This may result in obstructive emphysema of a pulmonary segment, lobe or entire lung. The bronchi dilate in inspiration, allowing inspired air to pass by a partially occluding tumor mass. In expiration when the bronchi are smaller, egress of air is hampered and obstructive emphysema may result distal to the mass, causing a wheeze simulating asthma. Patients previously free of allergic phenomena who develop a wheeze or asthmatoid type of breathing and dyspnea should be suspected of having a bronchial tumor. Unilateral wheezing is especially suggestive of neoplasm.

ATELECTASIS

Further growth of the tumor causes bronchial occlusion, with varying degrees of infection and atelectasis, the latter lobular, lobar, or involving the entire lung. Atelectasis resulting from occlusion of the larger bronchi is usually readily recognized; segmental atelectasis may be less suggestive of malignancy.

BRONCHOPNEUMONIA

The lobular type of atelectasis and infection most frequently passes under the diagnosis of bronchopneumonia or virus pneumonia. The clinical and physical findings of bronchopneumonia are characteristic, but the stethoscope cannot determine the etiology. It is also virtually impossible to differentiate between a pneumonitis due to infection and that secondary to cancer on a single x-ray examination. This examination should be repeated until all evidences of the bronchopneumonia have cleared. If the patient is discharged from the hospital on the basis of clinical improvement alone, a carcinoma may well be overlooked. Uncomplicated bronchopneumonia will clear in the expected period of time. "Unresolved pneumonia" may be tuberculosis, bronchiectasis, suppuration or bronchial occlusion possibly due to a tumor.



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REFERENCES: 1. Youngblood, V. H.: J. Urol. **70**:926, 1953. 2. Powell, E. M., and Wattenberg, C. A.: Tr. Southcentr. Sect. Am. Urol. Ass. Oct. 17-19, 1955. 3. Tudor, J. M.: J. Tennessee M. Ass. **49**:181, 1956. 4. MacLeod, P. F.; Rogers, G. S., and Anzlowar, B. R.: Internat. Rec. Med. **169**:561, 1956. EATON LABORATORIES, NORWICH, N.Y.

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If, following a course of antibiotics, a roentgen shadow persists in spite of clinical improvement, steps should be taken promptly to determine the reason for the failure. A "wait and see" policy is often fatal. If diagnostic steps fail to identify the lesion, an exploratory thoracotomy should be performed—the operative mortality is very low.

UPPER LOBE LESIONS SIMULATING TUBERCULOSIS

About 30% of bronchogenic carcinomas arise in the upper lobe bronchi. The insidious cough, hemoptysis, low-grade fever, loss of weight, ease of fatigue and occasionally night sweats in patients with bronchogenic carcinoma, as well as in patients with tuberculosis, make differentiation between the two diseases even more difficult if the cancer is in an upper lobe.

THE ENLARGED HILAR SHADOW

Minimal enlargement of the hilar shadow may either escape detection or be questionable. Asymmetry of the two sides may give some indication of an abnormal process. The significance of minimal enlargement may be questioned and valuable time lost before another x-ray or bronchoscopic examination. The enlarged hilar shadow may represent inflammatory or neoplastic lymph nodes, bronchial, vascular, or cystic diseases; or it may be due to inflammation or neoplasm of the underlying lung.

If a tumor is discovered and a definite diagnosis cannot be made, no time should be wasted in irradiation with the view that it might be a lymphoma. Explore all tumors that cannot be definitely diagnosed. If found inoperable, a biopsy can be obtained and x-ray therapy intelligently administered.

PERIPHERAL TUMORS

About 30% of bronchogenic carcinomas arise in the periphery of the lung. These are usually adenocarcinomas, more malignant than the more centrally located squamous-cell carcinoma. These carcinomas frequently have a latent stage during which time they are asymptomatic. Others have an insidious onset of an irritative cough, dull pain in the chest, pleural pain and occasional hemoptysis. They frequently simulate tuberculosis, tuberculomas, cysts or metastases. They infiltrate the pleura early and often cause pleural effusions. It is impossible to view these tumors bronchoscopically. Resection of the lesion is the only method by which the diagnosis can be made.

SUMMARY

As a result of educational efforts, patients are being seen in an earlier phase of their disease, as evidenced by the resectability rate of 32% today as compared to 7.5% ten years ago. The early signs and symptoms of carcinoma of the lung are presented.

Protective Mechanisms of the Tracheobronchial Tree

Description of the functions of the tracheobronchial tree with a discussion of methods to combat drying of the mucous lining and to remove the retained secretions

NOBLE O. CORRELL, JR., M.D.* &
HIRAM T. LANGSTON, M.D.,* *Chicago, Illinois*

Probably nowhere else in the body is such a menagerie of microbes as the pharynx openly connected to such a clean structure as the trachea. It is interesting to consider the mechanisms by which the tracheobronchial tree normally maintains such a clean house with so dirty a front yard.

MODUS OPERANDI

The first and most obvious factor is the cough. The "tussive blast" is usually effective in removing any gross object, solid or fluid—aspirated food, saliva, aggregations of inhaled dust and collections of bronchial mucus. Coughing may be the result of habit, the "nervous cough"; it may be premeditated and purposeful, or, as is true most frequently, the largely uncontrollable reflex cough resulting from mechanical stimulation or chemical irritation of the tracheobronchial tree. Depending upon the circumstances of the individual case, it may be desirable to subdue the cough, encourage it or leave it alone.

In addition to the tussive blast which is largely ineffective in removing tenacious mucus from the smaller bronchi, there is an associ-

*Department of Surgery, Chicago State Tuberculosis Sanitarium.

ated, less appreciated, mechanism for the evacuation of these structures of small calibre. At the end of extreme expiration of each blast, the smaller bronchi are squeezed to the extent of obliteration of lumen by intrathoracic positive pressure transmitted to the bronchi by the surrounding lung parenchyma. This narrowing of the bronchi, easily demonstrable at bronchoscopy, may completely obliterate the lumen as far proximally as the segmental orifices. Part of this decrease in calibre may be active bronchial constriction. Such bronchial narrowing expresses the fluid contents up into the major bronchi, allowing a column of air to be inspired behind the mucous deposit with the following breath. The next cough can then blast the semifluid mass out into the pharynx.

Thus, cough consists of two factors: the blast of air, so effective in clearing the trachea and larger bronchi, and the squeezing action of the smaller bronchi, which serves to empty them of fluid material.

SMALL PARTICLES

Foreign bodies of such particle size as to be suspended in the inspired air can not be kept out by cough. The tracheo-bronchial tree has another method for handling these smaller objects such as dust particles, bacteria and other microscopic material.

The lining of the tracheo-bronchial tree consists of a substantial layer of sturdy mucus. (This is also true of the nasal passages and accessory sinuses.) The mucous sheath lining the trachea and bronchi is produced by goblet cells, frequently arranged in clusters forming "mucous pits." The trachea and larger bronchi also have the well known racemose glands, which are likewise of importance in the formation of the mucous lining. The mucous lining is always being shed cephalad, forming a conveyor belt. The power for this continuous mass evacuation is provided by the cilia of the columnar epithelium lining the entire tracheo-bronchial tree. The mucous river commonly flows at the rate of one or two centimeters per minute, but is extremely variable under different circumstances. The cephalad flow of the mucous lining is likely the most important factor in the maintenance of the clean trachea next to the filthy mouth.

ALTERATIONS IN THE MUCOUS LAYER

Under some conditions, an alteration of the thickness and viscosity of the mucous layer becomes desirable. Chemical irritation of the epithelium, whether due to inhaled fumes, smog, wood smoke, coal smoke, or tobacco smoke excites the immediate production of extra mucus, thereby thickening the protective lining. Hence, the bronchorrhea of any chemical respiratory irritant.

Once the mucus reaches the larynx, it may be helped up onto the pharynx by a gargling action called "clearing the throat." From the pharynx, the mucoid mass is either expectorated or swallowed.

Fortified with this rudimentary knowledge of the housekeeping methods of the tracheo-bronchial tree, we can now consider how best to assist these natural mechanisms when the need arises.

DEHYDRATION A NATURAL ENEMY

The most insidious, yet certain, natural enemy of the cilia is dehydration. The cilia can not propel dry dust, or even tenacious mucus. Furthermore, if not bathed in mucus,

he cilia may degenerate. Loss of the rotective mucus lining leads to amage of the underlying epithelium.

Rapid drops in the atmospheric umidity must surely be compenated by an increased production of ucus of a lower viscosity, since the ry air inspired causes a higher rate f evaporation from the mucous lining. Daily drops in humidity, comonly seen in spring and fall in emperate climates, have large reponsibility for the flurry of upperespiratory infections seen at those imes. The obvious needs are housold humidification, patient hydraion and expectorants. Patients with hronic respiratory disease frequenty benefit by moving to a locality where temperature and humidity do not undergo such pronounced changes.

RETAINED SECRETIONS

Diametrically opposite to dehydration of the mucosa is retained secretions—an entity that is a killer. It requires early recognition and treatment. Some common causes are: extreme debilitation, excessive postoperative narcosis, shallow respiration, excessive postoperative pain with splinting of the chest, prolonged heavy sedation, a poorly attended tracheostomy and paradox following chest-wall surgery or trauma or diaphragmatic paralysis.

EVACUATION OF SECRETIONS

These secretions may be evacuated in a variety of ways. Any paradox should be eliminated by appropriated dressings or sand-bags or other chest-wall fixation. Urging to cough, with analgesics and support as necessary, frequently is all the treatment that is necessary.

CATHETER ASPIRATION

One may need to perform aspiration of the trachea through the nasopharynx. Use a urethral catheter with a smooth open tip and three or four fenestrations near the tip. The suction should be by a high-flow apparatus with a suitable trap, a glass Y piece interposed instead of the usual straight glass adapter. If secretions are desired for culture, a sterile collecting tube may be interposed in the system. Periods of aspiration should be short—five seconds or less—with rest periods of fifteen seconds to a minute or more depending upon the patient's reaction. Usually the insertion of the catheter tip to the level of the corina produces violent coughing which brings the mucus within reach of the catheter. The patient should not be allowed to cough until cyanotic. Usually withdrawal of the catheter from the corina will allow normal respiration. A low flow of oxygen can be given through the catheter during the rest period. A finger should be on the patient's pulse as long as the catheter is in the trachea. Reflex cardiac arrythmias are not uncommon, and cardiac arrest can occur.

As soon as the secretions have been cleared, usually after three or four aspiration periods, the catheter is withdrawn. Properly performed, the entire process lasts only a few minutes and is extremely effective.

Bronchoscopic aspiration is necessary in the patient with inspissated secretions totally occluding a bronchial orifice, with resultant atelectasis.

TRACHEOSTOMY

If retained secretions are present or anticipated over a prolonged per-

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need a nudge

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Vitamin C.....25 mg. (as sodium ascorbate)	for better hemoglobin formation and nucleic acid synthesis.

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ıd, tracheostomy may be the best ɔlution to the problem. This pro- ıides easy access to the trachea, so ıat nurses, attendants, friends, rel- ıtives and casual acquaintances can ısert the catheter into the trachea. herein lies its greatest danger. A acheostomy tube is not an innocu- ıs fitting of convenience. In order ɔt to contribute to the patient's ıorbidity and mortality, the aspirat- ıg catheter should be scrupulously ean, preferably sterile; it should ave a smooth open end and fenes- ations; aspirations must be gently erformed, and only so frequently nd so prolonged as to keep the se- retions removed.

URSING

Careful nursing is necessary to emove the secretions as soon as hey accumulate, because the patient vith a tracheostomy can no longer vacuate his trachea by cough. He has even lost the ability to strain to void or move his bowels. Bladder and bowel evacuation may require special attention. He is at the mercy of the nursing service. The more than 50% dead space eliminated by tracheostomy happens to also be the respiratory system's air conditioner. Unless this inspired air is now humidified, the tracheo-bronchial tree becomes dehydrated. Oxygen by catheter markedly accelerates the drying action. Bubbling oxygen through water is grossly inadequate. Reasonably effective mist or "cold stream" appliances are available. An electric steamer is a fair substitute. Hourly instillation of a few drops of sterile physiological saline (never water) and cleanliness of the tracheostomy tube and suction apparatus are of value.

A contaminated catheter, inserted into a dehydrated traumatized trachea will usually cause a serious tracheo-bronchitis, and, too frequently, bronchopneumonia. No one denies that a tracheostomy can be lifesaving; but it requires scrupulous, careful, intelligent attention.

SUMMARY

The natural mechanisms protecting our respiratory systems include: cough, with its tussive blast followed by bronchial narrowing; the continuous mucus-lined conveyor belt system, wherein we shed this lining every several minutes; the continuous production of mucus for replacement by the ciliated goblet cells found in mucous pits and racemose glands; and the cilia of the epithelial cells lining the tracheo-bronchial tree, these cilia providing the power that keeps the mucous river always flowing cephalad.

Severe and sudden decreases in atmospheric humidity lead to drying of the mucous lining, ciliary damage and tracheo-bronchitis. Treatment is directed toward humidification and hydration.

Retained secretions can be removed by forcing the patient to cough on demand, blind tracheal catheter aspiration, bronchoscopic aspiration, or catheter aspiration through a tracheostomy. The person performing a tracheostomy assumes responsibility for providing the patient with humidified air and careful, gentle, hygienic removal of all of his tracheo-bronchial secretions.

Protein Deficiency,

A Hazard in Surgical Patients,

With surgery made safe for the patient,

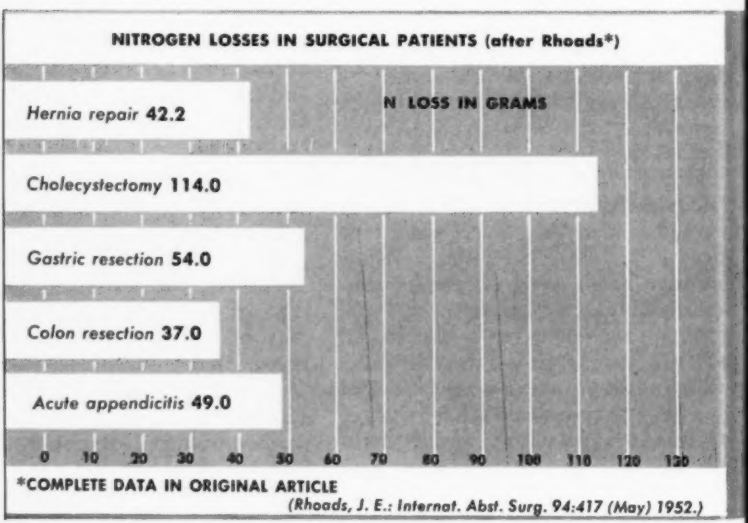
the patient may now be made safe for surgery.

Patients about to undergo extensive surgery[1] frequently have negative nitrogen balance and protein deficiency. And after any severe trauma, including extensive surgery, the rate of protein breakdown is increased.

It is also well recognized that patients with a strongly negative nitrogen balance are much more prone to suffer delayed wound healing[2], secondary infections[3], shock[2] and also delayed convalescence[4].

The need for an effective protein anabolic agent is stated by Moore and Ball[5] —"there is one unbreakable rule of surgical convalescence: to complete his recovery, regain strength and return to work the patient *must* come into positive nitrogen balance."

Nilevar (brand of norethandrolone) is a new anabolic steroid which rapidly and effectively reverses or diminishes excessive protein catabolism and nitrogen loss accompanying major surgical procedures. The protein anabolic activity of Nilevar is specific. There are usu-



Bioflavonoid Compounds in Erythroblastosis Fetalis

The six cases presented here afford evidence that the use of these compounds reduces the severity and has value in the prevention of this cause of fetal loss

WARREN M. JACOBS, M.D., *Houston, Texas*

Erythroblastosis-fetalis is a major cause of fetal loss and of certain cases of cerebral palsy. At present, the management of erythroblastosis fetalis is based upon treatment of the affected baby after delivery has taken place. The ideal solution to this problem would be to find some substance which would prevent this antigen-antibody reaction, prevent placental transmission of the fetal cells which initiate the reaction, or prevent placental transmission of the antibodies themselves.

RATIONALE OF USE OF THE BIOFLAVONOID COMPOUNDS

The mechanism of Rh iso-immunization is based upon the concept that Rh positive fetal cells enter the maternal circulation through some break in the placental capillary system, set-up antigen-antibody response with production of Rh antibodies which freely cross the placental barrier back into the fetus, and attack and destroy the fetal red cells. In most instances, it has been seen that the walls of the venule had a tri-cornered tear through which the blood cells escaped. Since the bioflavonoids oppose this action, it is possible that, when given during the course of a pregnancy, this crossover of fetal cells may be reduced or even

prevented. Since the bioflavonoids have an antihistamine action, this may also be of benefit since Rh-Hr sensitization is an antigen-antibody reaction. However, antihistamine drugs have been tried in the past without much success.

Finally, increased capillary fragility in the baby is a prominent feature of erythroblastosis. These three factors then—prevention or reduction in capillary fragility of the placenta, antihistamine reaction, reduction or prevention of capillary fragility in the baby—are the basis for the use of bioflavonoid compounds in the treatment of Rh iso-immunized women.

EXPERIMENTAL USE OF C.V.P.

In this report, only mothers with previous definite evidence of immunization were studied. It is generally agreed that once immunization has occurred, each additional Rh positive child will be affected, and probably more so than his predecessor. Antibodies cannot be destroyed, but it is hoped that further cross-over of fetal cells and additional iso-immunization may be prevented or kept at a minimum. This report deals with six cases of previously Rh immunized mothers treated with CVP, the trade name of a bioflavonoid compound, during the course of their present pregnancy. Twelve such mothers received CVP, but six were discarded from the series—five because the babies proved to be Rh negative (all of these husbands were heterozygous positive), and one because the previous history of immunization was doubtful. The dosage of CVP used was 6 capsules daily, 600 mg. of the bioflavonoid compound, started before the fourteenth week of pregnancy, the time at which it is believed crossover begins.

The most dramatic results were obtained in three patients. Although these three patients delivered erythroblastotic infants before, they showed no titer rise at any time in their pregnancies, and the infants were completely unaffected, as evidenced clinically and by laboratory studies. In the remaining three patients, base-line titers were present early in gestation—apparently hold-over antibody titers from previous immunization. In none of these was the titer rise more than slight. One would expect that under ordinary circumstances these infants would be at least as severely affected as their predecessors, and probably more so. However, it was the opinion of the attending physician in all of these cases that these infants were healthier and less affected than the previous ones.

CONCLUSIONS

These infants received exchange transfusion because it would not be fair to compromise the current principles of therapy of erythroblastosis fetalis on the basis of an unproved drug, but it was believed by all concerned that because these infants were only mildly affected, exchange transfusion probably was not necessary. It would be presumptuous to forecast a cure-all for erythroblastosis fetalis. However, these cases afford evidence that the bioflavonoid compounds have value in its prevention or reduce its severity. Similar studies of a larger series of cases may give the ultimate answer. Such studies are now being undertaken.

Surg. Gynecol. & Obstet. 103:223-236,1956.

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Present Status of the Estrogen-Androgen Replacement Experiments

The steroid replacement in elderly women that is under exhaustive investigation at the present time is a 20 to 1 ratio of testosterone over estrogen

WILLIAM H. MASTERS, M.D., *Saint Louis, Missouri*

The entire concept of steroid protection from "puberty to grave" for the aging human mechanism is open to challenge. The replacement techniques are basically limited by problems of approach and concentration of material. The approaches have been the intramuscular injection of material and the oral routes of direct ingestion and transmucosal absorption. All of the published results to date have been from use of parenteral injection techniques—the intramuscular route is still popular in dealing with the aged. The oral route is far preferable for long-range replacement.

The steroid replacement under exhaustive investigation at present is a 20 to 1 ratio of testosterone over estrogen. One of the great difficulties is in transferring a proved steroid dosage from the intramuscular to the oral route. Each estrogenic preparation varies in its absorption rate from the gastrointestinal tract from that marketed by a different pharmaceutical house; e.g. ethinyl estradiol is more readily absorbed from the gastrointestinal tract than the true follicular hormone, alpha estradiol, which in turn is absorbed many times more readily than one of its conjugated forms, such as sodium

estrone sulphate. The same applies to testosterone products. Also the transmucosal absorption technique is at least five times as effective, mg. for mg., in establishing blood levels as is direct oral ingestion.

TESTOSTERONE-ESTROGEN RATIO

The 20 to 1 ratio of testosterone over estrogen in sex steroid replacement was established as a result of six years of experimentation with aged women patients. An absolute dosage of 1 mg. alpha estradiol and 20 mg. testosterone propionate given intramuscularly twice weekly has proved to be the most desirable dosage.

The combination of estrogen and testosterone has proved infinitely more satisfactory than the individual components given in clinically acceptable dosage levels; e.g. 2 mg. of alpha estradiol given once weekly will, over a period of weeks (usually 6-8), initiate vaginal bleeding, if this clinically effective estrogen dosage is unopposed. Conversely, 40 mg. of testosterone propionate given weekly in conjunction with the estradiol dosage will prevent the development of endometrial hyperplasia, and vaginal bleeding will never be a deterrent to long-range sex steroid influences in a woman.

Because of the counterbalancing action of the estrogen, hirsutism will never be a problem in the woman despite years of testosterone administration at effective levels. It would be well if we could establish a dosage schedule for combined therapy that would work equally well for men and women. It is my conviction that there exists a third sex composed of men and women who have reached 60 years of age. Essentially the same types of medication should be effective for what one might term this "neuter gender."

More than 200 patients now comprise the various experimental groups. The results returned tend to confirm, in large part, the previously reported results. The basic problem is explaining the cause for the obvious physical and mental improvement of the experimental patients when compared with the controls.

The next step is a major public health project. If there is to be any value to the theory and to the patients treated in the past eight years, it must be proved by public health standards and techniques over a period of years. Thousands of patients must be closely followed by many clinics and impartial observers if we are to prove or disprove the thesis of steroid replacement therapy.

Mississippi Vall. M. J., 78:177-178,1956.

Indications for Tonsillectomy and Adenoidectomy

Adenotonsillectomy should *not* be performed prior to age 4 or 5 years, unless plainly and strongly indicated. There are few indications for tonsillectomy in adults. Recurring attacks of tonsillitis, peritonsillar abscess, and low-grade sore throat, with or without systemic sequelae, are the most common reasons for the operation in adults. Foul breath, produced by putrefactive changes in the detritus of the tonsillar crypts, is a reason in some cases.

Alfaro, V. R., *M. Ann. District of Columbia*, 24: 119-122, 1955.

AGE . . . In older people, chronic constipation and biliary dyspepsia are often the result of decreased food and water intake, inactivity, intestinal muscle atonicity, increased anorectal disorders, biliary stasis.

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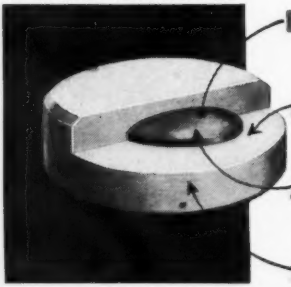

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The diets of these girls are poorest in iron and calcium. Deficiency of these minerals is not easily overcome, particularly during adolescence, pregnancy, and lactation . . . the periods of greatest energy and nutrient needs in the lives of girls and women. Today's early marriages mean that motherhood frequently follows closely upon the adolescent period, increasing the relative importance of a good diet at this time. The diets of teen-age girls will meet recommended allowances with respect to iron and calcium and other nutrients if they regularly consume four cups of milk daily, with liberal amounts of meat, fruits, vegetables, and cereals.

Four to six cups of milk each day . . . to drink . . . used in food preparation . . . as cheese or ice cream . . . will provide the calcium needs of teen-age girls . . . and generous quantities of high quality protein and other essential nutrients.

In planning meals for teen-age girls, *milk and milk products are foundation foods for good eating and good health.*

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A Simple Bedside Technic for Measuring Blood Volume

This visual comparator provides a rapid and simple technic for evaluating the amount of blood loss; it does not require skilled technicians or unusual equipment

ROBERT H. GRUVER, M.D., *Washington, D.C.*

In most general hospitals, the problem of acute hemorrhage is frequently encountered. The hematocrit provides a poor index of the blood loss, since blood dilution has not yet taken place. The T-1824 dye method (Evans blue dye) provides a method of plasma volume determination. However, this requires a spectrophotometer and a technician skilled in the use of this instrument; many bleeding patients are admitted when a technician is not immediately available.

A 0.5% solution of T-1824 is available in 5 cc. ampules. The dye is drawn up in a syringe, the empty dye ampule rinsed with saline, and this also is drawn into the syringe and 15 cc. of blood is withdrawn by venipuncture. Then the blood-sampling syringe is detached from the needle. The syringe containing dye is attached to this needle and the dye injected, the plunger drawn back once or twice to flush all dye into the circulation.

A few cc. of blood from the sampling syringe is placed in an oxalate flask for hematocrit examination. The remaining blood (10 cc.) is placed in a centrifuge tube contain-

ing two drops of heparin. To prevent hemolysis, blood is run gently down the side of the centrifuge tube, care being taken to exclude any bubbles which may be in the syringe. The tube is gently inverted several times to prevent clotting.

After 15 minutes, 10 cc. of blood is obtained from a vein in the opposite arm and placed in another centrifuge tube containing two drops of heparin (again excluding all bubbles). The tube is gently inverted to prevent clotting. Both blood specimens are centrifuged, the plasma drawn off and placed in (Kahn precipitin) test tubes.

INTERPRETATION OF THE TESTS

A series of standard dilutions are made up with the dye in distilled water, representing plasma volumes from 1,000 cc. to 3,500 cc., in increments of 250 cc. The light absorption of T-1824 dye in plasma differs slightly from the absorption of the dye in water. Allowance must be made for this difference in the preparation of the standards. The technic of preparing such standards will be reported in another article. In a wooden comparator block, the dyed plasma is backed up with a tube containing distilled water. The undyed plasma is backed up with the various standards until the light intensity matches the dyed plasma sample.

Differences in *color* between dyed plasma often appear in varying shades of green, and the blue standard dilutions. This color difference is eliminated by covering the viewing slits with a gelatine filter (Wratten A). By viewing in a strong light (x-ray viewbox or other fluorescent source), *light* intensities only could be compared without color interference.

Plasma volume was determined by the visual comparator in 12 subjects, and the results checked with the use of a spectrophotometer—ave. deviation 4.1%, maximum 10%.

The normal plasma volume is 40-45 cc./Kg.; the "normal" for each patient under study was determined by multiplying his weight in kilograms by 42 cc., and the plasma volume deficit by subtracting the measured plasma volume from the expected *plasma* volume. The total *blood* volume was calculated in the usual way by dividing the *plasma* volume by the plasmatocrit (1 minus the hematocrit in hundredths). The expected normal total blood volume was calculated by dividing the expected normal plasma volume by a plasmatocrit of 0.58 (1 minus 0.42). The total blood volume deficit was obtained by subtracting the actual total blood volume from the expected normal total blood volume. Red cell volumes were obtained by subtracting the respective plasma volumes from the total blood volumes.

CONCLUSIONS

The need for a rapid simple technic for evaluating blood volume is great, since the hematocrit provides a poor index of the amount of blood loss from acute hemorrhage. Our study on 21 patients with hemorrhage of various origins has shown the usefulness of the visual comparator in planning blood replacement.

Med. Ann. Dist. of Col., 25:299-303,1956.

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Acute Viral Hepatitis

Bed rest in the acute phase, limitation of activity, and a diet high in proteins and carbohydrates constitute the important factors in therapy

J. RICHARD GOTT, JR., M.D., *Louisville, Kentucky*

Patients should remain at bed rest until they have begun to feel well, the liver has diminished in size, and laboratory studies indicate a return toward normal—two or three weeks on the average. Then, if limited activity has no unfavorable effect, activity may be gradually increased, keeping close check on the size of the liver, how the patient feels, and the results of liver-function tests, particularly of the serum bilirubin level. There should be some restriction of activity until BSP excretion, cephalin flocculation and thymol turbidity tests are normal or near normal—an average of 8 to 12 weeks.

Diet should consist of 2600-3000 calories—300-500 carbohydrates 150-200 gms. protein. Consider the patient's food preferences. If the diet is adequate in all respects, there is no need for supplements such as choline, methionine, liver extract and the various vitamins.

Vitamin K should be used if the prothrombin time is prolonged; if this is caused by inability of the liver cells to use vitamin K, its administration will not be helpful; but it may serve as a liver-function test. In case of prolonged prothrombin time, either with or without bleeding, we use 72 mg. Hykinone intravaneously daily for three days, and then retake the prothrombin time. This constitutes intensive therapy for vitamin K deficiency and shows

whether the prolonged prothrombin time is caused by a deficiency in vitamin K or by the inability of the liver cells to use it. Hykinone may be given in dosages of 5 to 15 mg. daily, hypo. or intramuscularly for prophylactic or maintenance therapy.

In patients with symptoms of general malaise and loss of appetite, we use prednisone, 10 mg. every six hours; after improvement, this is reduced to 5 mg. every six hours for one to two weeks, or until the patient has a feeling of well-being and a good appetite.

Some patients tolerate any sedative well, but in severe cases even small doses of any sedative may have an exaggerated or prolonged effect; they may even be a factor in the development of irreversible hepatic coma. Demerol, the bromides, and long-acting barbiturates such as phenobarbital and barbital, which are excreted in part by the kidneys, are the least hazardous sedatives. Any sedative should be used with caution.

The cause of hepatic coma is unknown. It may occur in the severe forms of either acute or chronic liver disease, and there are no certain laboratory tests. Recent work shows that there is frequently a high level of ammonia, and coma often develops in patients who are receiving ammonium salts.

Give no ammonium compounds, such as ammonium chloride or cation exchange resins, in comatose or other severe cases. Protein, if permitted at all, should not be given beyond basal requirements. Glutamic acid by mouth and sodium glutamate intravenously, 20-30 gm. daily, have proved effective in clearing the coma, but apparently do not affect the basic course of the disease.

J. Kentucky State M. A., 54:710-715,1956.

The Doctor Builds His Estate

Prepared for the readers of Clinical Medicine by the Research Department of Bache & Co., a leading investment banking and brokerage firm, 36 Wall Street, New York 5, New York

These monthly articles point out one method by which the professional man may overcome the particular handicap imposed upon him by our tax structure, which taxes the bulk of his income at normal income tax rates, as opposed to the capital gains tax avenue open to many business men. One solution to this problem is the systematic investment of a portion of current income each year in securities. Such a program, which should include many different types of investments such as bonds, preferred stock, common shares and shares of mutual funds, will have as its objectives growth of principal together with reasonable income. We again emphasize that even the most complete series of articles of this type cannot take the place of consultation with a representative of a reputable brokerage firm.

The steel industry has been a bulwark of the economy in recent months, and promises to continue in that role in the months ahead. The industry has made a sharp recovery from the strike of last summer, and is now operating at the highest level in its history. Steel operations nationally recently ran at above theoretical capacity for fifteen consecutive weeks, the longest stretch of above-capacity operations in the past four years.

Orders now on steel mills' books for the first quarter are excellent, and beyond that there are indications that the second quarter will be strong as well. In fact, some industry leaders have gone as far as to predict that the industry, as a whole,

will approach capacity operations for all of 1957.

In connection with this trend, we feel that industries in three groups are likely to benefit. These include the makers of ferro alloys, elements which are added to steel in order to improve various qualities; the steel industry itself, and the customers of the steel industry, particularly the ship-building industry. We have chosen, therefore, three stocks from these groups — Allegheny Ludlum Steel Corporation, Climax Molybdenum Company and Newport News Shipbuilding and Dry Dock.

CLIMAX MOLYBDENUM COMPANY

Climax Molybdenum Company is the world's largest producer of molybdenum, an important alloy used in steel production. The company operates a huge molybdenum mine at Climax, Colorado, believed to be the largest underground mine in North America. Even at the present high rate of production, ore reserves are adequate for some thirty-five years of operation at today's metal prices.

Three quarters of the molybdenum used in the United States today is consumed in steel. The element is used almost universally in alloy steels, in quantities ranging from one tenth of one per cent up to 6% in tool steels.

Some five years ago, Climax undertook an expansion program designed to bring capacity to 25,000 tons of ore a day. In 1955, the company treated over 30,000 tons of ore, and is now adding additional units to bring capacity to roughly 34,000 to 35,000 tons of ore per day.

This is not a simple operation, since the company must prepare ahead and have, in reserve, approximately 1000 tons of broken ore reserves for each ton of daily capacity. It was this need to prepare broken ore reserves, in conjunction with use of lower grade ore temporarily necessitated by this process, that has caused this year's minor down-turn in earnings.

It is estimated that automotive uses account for approximately 28% of total molybdenum consumption in steel, while petroleum production accounts for 15%, tool steel for 15%, process industries for 11%, machine tool and heavy machinery steel for 7%, and aircraft uses for 5%. Consumption is likely to grow 50% in the next decade, some authorities say.

Earnings have been rising steadily in recent years, from $2.41 a share in 1951 to $6.78 in 1955. For the above mentioned reasons, earnings have turned downward this year, and amounted to only $3.66 a share for the first nine months, compared to $5.34 a share in the same nine months of 1955. The technical difficulties at the mine, involving the mining of lower grade ore than is customary, are still not completely worked out and will probably adversely affect fourth quarter earnings. Full-year earnings should approximate $5 per share. The technical difficulties at the mine are likely to continue on into the first quarter of 1957, at which time it is hoped they will be completely solved.

When the company's second mill unit comes into production in the second quarter, and the mining difficulties are worked out, it is anticipated that production will rise to approximately 35,000 tons of ore per day, and that earnings will be reestablished at the levels achieved in

Climax Molybdenum Company			
Recent Price	66¼	Capitalization	
12 Mos. Dividend	3.60	Long-term Debt	None
Yield	5.43%	Common Shares	2,580,000
1956 Price Range	78½-60		
Traded	N.Y. Stock Exchange		

195 of around $1.75 to $2 per quarter.

Molybdenum, although obviously the company's main product, is not the only string to the Climax bow. One possible source of substantial income over the long-term will be molybdenum base alloys, basically metallic molybdenum, which would make molybdenum a base element instead of an alloying element. Thus, a molybdenum base alloy would have 90 to 99% molybdenum, and a small percentage of an alloying element, instead of the present situation where molybdenum is used in small quantities in each item. The company says that molybdenum base alloys possess greater structural strength at high temperatures than existing commercial materials. Military interest centers in their use in high temperature applications in jet engines and guided missiles, while industrial interest would lie in the field of die casting dies, electrodes for glass melting appliances and in the manufacture of seamless tubing.

In addition, Climax holds an 84.07% interest in the Climax Uranium Company. This company is now doing an annual business in excess of $10 million but earnings are not included in the Climax earnings as reported. Moreover, Climax Molybdenum, at year-end 1955, had a net investment in oil and gas property amounting to $8,851,000. Gross income from oil and gas rose to $1,685,000 in 1955 from $933,000 in 1954, and it is estimated that this income amounted to approximately $2.2 million in 1956, before depletion, depreciation and dry-hole write-offs.

A high rate of steel operations will insure continued high demand for molybdenum. Moreover, earnings are likely to turn-up sharply sometime in early 1957 as technical difficulties in the mine are overcome. Also, the stock possesses definite long-term appeal characteristics. These include the company's growing uranium and oil ventures, the promising potential for metallic molybdenum alloys for the future, as well as a possible substantial growth in consumption of molybdenum both here and abroad. At present levels of approximately 13 times depressed 1956 earnings, and at 9-10 times estimated 1957 earnings, the shares appear reasonably priced.

NEWPORT NEWS SHIPBUILDING & DRY DOCK COMPANY

Newport News is one of the largest shipbuilding concerns in the country and is the largest among the private yards. In addition to its shipbuilding activities, the company also does conversion, repair, reconditioning and rebuilding of ships. It also manufactures hydraulic turbines and mechanical accessories for hydroelectric power plants, heavy machinery in castings; marine and special industrial plants and pressure ves-

sels for such applications such as petroleum refining and atomic energy. Some 69% of its gross income in 1955 came from shipbuilding, 13% from ship conversion and repairs and 18% from hydraulic turbines and other work.

The shipyard at Newport News, Virginia, is one of the largest and most modern in existence. It covers about one and a quarter miles of waterfront and constitutes a complete and highly integrated unit, with fully equipped machine shops, forging facilities, and large iron, brass, and steel foundries. The two largest of the seven ways are the only private ones currently capable of accommodating ships the size of the "United States" and the "Forrestal," two of the largest ships afloat which were built at the yards.

Of perhaps even greater importance from a long range standpoint is its work on nuclear energy for marine purposes. It is currently working with Westinghouse Electric Corporation on the construction of a proto-type nuclear propulsion unit suitable for use in a large surface vessel. The company is thus expected to be in the forefront among prospective builders of atomic powered merchant vessels whose construction was recently authorized by the President.

With the oil industry planning to increase the world's tanker fleet by over 50% in the next five years, the outlook for American shipbuilders is highly favorable. Practically all foreign yards are booked to capacity for at least three years and delivery dates run to 1961 and beyond. Only the United States has available capacity of any consequence, and this is being reduced considerably by the recent influx of orders for tankers.

Newport's backlog of unbilled contracts fully reflects this situation having increased substantially over the last twelve months. As of September 30, 1956, it amounted to approximately $251 million as compared with $150 million a year ago. Included in the latest reported contract figures are orders for the construction of six new tankers. Since September, moreover, Newport News has signed additional contracts including one for the construction of two 51,000 ton super tankers and two 60,000 ton tankers. This brings the company's backlog of super tankers orders to 14. Deliveries are scheduled for 1959 and 1960.

What's more, the company's latest contracts are being written with higher profit margins, representing an important reversal in trend. The lower earnings reported in 1955 and estimated for 1956 resulted from severe competition prevailing in the industry, together with higher costs, which resulted in all of its new shipbuilding and conversion contracts being undertaken at abnormally low profit margins.

In addition to the large volume of new tanker contracts on hand and in view, U.S. Lines Company is expected to place an order soon for a large new passenger liner to replace the SS. "America" which, in 1960 will be 20 years old and therefore will be ineligible for subsidy unless such a vessel is contracted for. Newport News appears to stand a good chance of getting this contract inasmuch as it was the builder of the highly successful S.S. "United States."

Early next year Newport News will lay the keels for two new passenger vessels for the Grace Line.

Newport News Shipbuilding & Dry Dock Company			
Recent Price	80¼	Capitalization	
12 Mos. Dividends	$ 2.50	Long-term Debt	None
Yield	3.11%	Common Shares	800,000
1956 Price Range	87½-50		
Traded	N.Y.S.E.		

The are the forerunners of some 24 new vessels which the line must replace. In addition, the American President Lines has announced plans for replacement of 24 vessels and Moore-McCormack for 33. All of the vessels of these three steamship lines are to replace ships that are over 20 years old and are estimated to cost a total of $870 million. Newport News should participate substantially in this total business. The company enjoys an excellent earnings record with profits having been shown in every year since 1936. Since 1945 reported earnings have been consistently high and during the last ten years have averaged $6.67 per share and in the last three years $7.80 per share. Such excellent results may be attributed to Newport's highly regarded management as well as its modern and fully integrated plant facilities.

Earnings for the six months ended June 30, 1956, amounted to $2.49 per share on net sales of $51 million as compared with earnings of $3.19 per share and net sales of $60 million in the same period of the previous year. No later earnings figures are available but estimates for the full year are in the neighborhood of $4.50 per share, down considerably from the $6.03 reported in 1955. It is our opinion that 1956 will be the low point as far as earnings are concerned for some time to come.

Although Newport News shares have advanced considerably in anticipation of these excellent prospects, we believe that the shares still possess attractive appreciation potentials.

ALLEGHENY LUDLUM STEEL CORPORATION

Allegheny Ludlum Steel Corporation is a leading producer of stainless steel and other alloy steel products. Through a 50% owned affiliate, the company is a leading factor in titanium, a metal with immense potential for future growth.

Allegheny Ludlum has carried on a modernization and expansion program, spending $110 million since the end of World War II, and the results of this rogram have shown up graphically in the last two years.

Sales of stainless steel products represent about half of the company's dollar volume, while electrical steel and electrical alloy products represent another 30%. Stainless steel products are sold to a wide variety of users, including manufacturers of automobiles, industrial equipment for the processing of chemicals, foods and other commodities, aircraft, household appliances, utensils and cutlery and military equipment, including atomic energy. Stainless steel is widely used in applications where corrosion-resistant qualities are desired, as well as for decorative, architectural, heat-resistant and other purposes. Electrical steel products are used in the manufacture of transformers, mo-

tors, generators, communications equipment and other electrical equipment.

The growth of stainless and other alloy steels has been faster in the past decade than carbon steels generally. In line with this trend, the company has increased its sales from $95 million a decade ago to $225 million in 1955 and to $202 million in the first nine months of 1956, compared to $181 million in the same period a year earlier, despite the steel strike which took place this past summer.

This strike was also responsible for cutting the company's earnings during the third quqarter to 15¢ a share. Earnings for the first nine months amounted to $2.56 a share, compared to $2.96 a share in the same period of 1955. Earning power has risen from the $2 to $2.50 of a decade ago to the reported earnings of $4.12 a share in 1955. Moreover, these reported earnings do not include the earnings of Titanium Metals Corporation of America, which is 50% owned by Allegheny Ludlum. The company has recently released the earnings figures for Titanium Metals Corporation. They show a net income of $7.2 million in 1955, of which $3.6 million represents Allegheny Ludlum's unconsolidated share. This would have amounted to almost $1 per share of Allegheny Ludlum. Moreover, in the first six months of 1956, Titanium Metals Corporation showed a net profit of $5,205,000 after taxes, or almost 70¢ a share of Allegheny Ludlum.

If it had not been for the steel strike in 1956, the company might well have earned $5 per share. Again, this would not include the approximately $1.50 a share being earned by the company's affiliate which is not included in the parent company's accounts. Thus, each present share of Allegheny Ludlum Steel represents earning power of approximately $3.50 a share at the present time.

The growth of titanium has been spectacular. The total production of titanium now amounts to about 29 million lbs. a year, compared to literally almost nothing less than 10 years ago. Moreover, production is expected to grow a "whopping" 135% in 1957.

T.M.C.A. has a present capacity of about 7.2 million lbs. of titanium sponge annually, making it one of the major producers in the world. The company also is the largest single producer of mill products in the titanium industry. At the present time, T.M.C.A. has underway two expansion programs which will increase its titanium sponge capacity to about 18 million lbs. per year. These programs will be completed in 1957, and will be paid for from T.M.C.A.'s own resources.

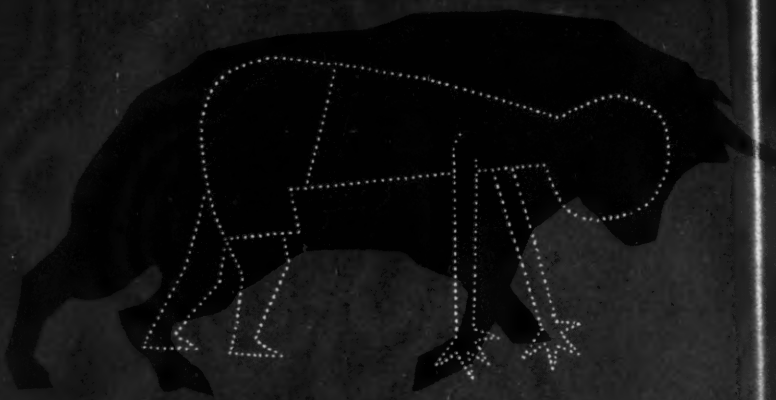
Military aircraft are, at present, the largest consumers of titanium, but the metal is believed to have great growth possibilities in the chemical, electrical and other industries.

Allegheny Ludlum owns 23% of the stock of Nuclear Metals Incorporated, which operates an Atomic Energy Commission laboratory engaged in atomic energy research, particularly in the metallurgical field. The company recently announced the completion of a new furnace for melting high purity zirconium metal, which is urgently needed for structural and fuel element applications in atomic reactors. The company is building another furnace, and will then have a rated capacity for the

Allegheny Ludlum Steel Corporation			
Recent Price	62¾	Capitalization as of June 30, adjusted to include $16,377,000 in convertible debentures issued in September.	
Indicated Dividend	$ 2		
Yield	3.18%		
1956 Price Range	64½-30	Long-Term Debt	$39,903,000
Where Traded	N.Y.S.E.	Common Shares	3,733,949

production of zirconium ingots at 125,000 lbs. per month. Zirconium has become a favorite structural material in atomic reactors due to its low thermal-neutron cross-section, which is vital to maintaining a high level of efficiency in the operation of reactor. Zirconium metal melted by the company was used by Westinghouse Electric Corporation in the atomic submarine "Nautilus."

Allegheny Ludlum places a constant and growing emphasis on research for the improvement of its existing products and processes and for the development of new products for the future. Considering the strong demand for the company's products likely in the near future, and the bright potential for long-term growth we feel the shares, at their present price of less than 10 times present indicated earning power, are reasonably priced for long-term growth.



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Bischoff DIVISION

gentles kids...

He'll be gentle as Ferdinand once he tries easy-to-take DIATUSSIN—either plain or mixed with food or drink.

and coughs

Parents, too, calm down when they see how quickly a few drops of DIATUSSIN lessen frequency and severity of cough...and without sedating or upsetting their offspring.

Dosage:

Under 5 years...2 to 4 drops, 3 or 4 times daily. Over 5 years...5 drops, 3 or 4 times daily. Severe cases...2 drops every 2 or 3 hours. Adults...5 to 7 drops, 3 or 4 times daily.

Formula: Extracts of thyme and drosera in an aqueous alcoholic menstruum (alcohol content 22%).

Supplied in 6-cc. bottles with new, flexible plastic dropper.

DIATUSSIN Syrup contains in each teaspoonful 2 drops of the extract in an aqueous syrup vehicle—alcohol content 5%. Available in 4-ounce, 1-pint and 1-gallon bottles.

AMES COMPANY, INC · ELKHART, INDIANA

NEW PHARMACEUTICAL PRODUCTS

Dorana Ointment and Suppositories

(Ives-Cameron)

Promotes tissue repair while relieving the pain and discomfort of hemorrhoids without a topical anesthetic agent. Serious anorectal disorders are not masked and there is no risk of possible sensitization. Contains a probiotic factor that increases cell respiration and thus promotes tissue growth, shark liver oil and phenylmercuric nitrate. A special base is added in Dorana Suppositories. *Indications:* Hemorrhoids and associated disorders. *Supplied:* Ointment is supplied in one-ounce tubes and Dorana Suppositories are available in packages of twelve.

Compazine *(S.K.F.)*

This tranquilizer, known generically as proclorperazine, is a new phenothiazine derivative that is entirely distinct from chlorpromazine. No instance of blood change or jaundice has been observed. In the recommended dosage range side effects are infrequent, mild and transitory. *Indications:* Mental and emotional disturbances; psychic stress associated with various somatic conditions; nausea and vomiting. *Dosage:* 5 mg. to 40 mg. per day, as directed by the physician. *Supplied:* Bottles of 50 and 500 tablets, 5 mg. strength.

Achromycin Topical Spray

(Lederle)

A convenient form of the broad spectrum antibiotic Achromycin tetracycline that can be sprayed directly on the affected area. It permeates the skin rapidly and dries almost instantly, reducing the danger of soiled or stained clothing. *Indications:* For prevention of infection in minor skin cuts and abrasions. *Supplied:* Three ounce dispenser with aerosol spray applicator. Each dispenser contains 710 mg. (1%) of Achromycin tetracycline.

Moderil *(Pfizer)*

Contains rescinnamine, an alkaloid derived from Rauwolfia which possesses ataractic and hypotensive action. It is reported to produce fewer and less severe side effects than other Rauwolfia therapy. *Indications:* Chronic nervous tension and anxiety, and control of mild to moderate hypertension and high blood pressure. *Dosage:* The recommended initial dose is 0.25 mg. twice daily for two weeks. The maximum initial dose should not exceed 0.5 mg. twice daily for one week. Dosage is regulated depending on patient response. *Supplied:* Bottles of 100 and 500 oval, scored, yellow 0.25 mg. tablets and bottles of 100 oval, scored, salmon-colored 0.5 mg. tablets.

Sigmamycin Oral Suspension *(Pfizer)*

A mint-flavored combination of the wide range antibiotic tetracycline with oleandomycin to provide extended range of protection against resistant pathogens. *Indications:* A wide variety of infections, and to provide added protection against the emergence of resistant strains of bacteria. *Dosage:* Orally as directed by the physician. *Supplied:* 2 ounce bottles containing 1.5 gm. of the combination to which water is added. The resulting 60 cc. of suspension contains 125 mg. of Sigmamycin per 5 cc.

Plaquenil Sulfate *(Winthrop)*

A colorless crystalline solid, soluble in water to at least 20%. Although the exact mechanism of action is unknown, there is a possibility that the drug screens certain ultra violet wave lengths from sunlight. Side effects are uncommon and related mainly to the gastrointestinal tract. *Indications:* Lupus erythematosus, polymorphic light eruptions, malaria, etc. *Dosage:* In lupus erythematosus and polymorphic light eruption, the average adult dose consists of 400 mg. given orally once or twice daily for several weeks or months depending on the patient's response. In prolonged maintenance therapy, 200 to 400 mg. daily will suffice. In malaria, an initial adult dose of 800 mg. is followed by 400 mg. in from 6 to 8 hours, and 400 mg. on each of two successive days (total 2 gm.). In giardiasis, 200 mg. three times daily is advised. *Supplied:* Bottles of 100 tablets. Each tablet contains 200 mg.

Vistabolic *(Organon)*

A gerontotherapeutic preparation designed to help the geriatric patient during periods of stress. It contains minimal amounts of ingredients which provide anti-stress, anabolic, and nutritional support, and through their combined actions produces a general alleotic effect. Contains hydrocortisone, Stenediol, a non-virilizing anabolic steroid, and vitamin B_{12}. *Indications:* For use after surgery, during convalescence from debilitating diseases, in neurasthenia, fatigue, poor nutrition, emotional tension, and mental depression states. *Caution:* Vistabolic should not be used in place of cortisone, hydrocortisone, or ACTH where full therapeutic doses of these materials are required. *Dosage:* The average dosage of Vistabolic tablets is 1 or 2 tablets per day for 2 to 4 weeks after surgery, debilitating disease or other stress situations. The dosage for Vistabolic Injectable is 1 cc. two or three times a week for the same period. If Vistabolic is to be employed for longer periods of time or in more concentrated dosages, the usual precautions for cortisone and/or androgen therapy must be observed. *Supplied:* Vistabolic tablets are individually stripped and packaged in boxes of 30. Vistablic Injectable is available in 10 cc. multiple dose vials.

Tetracydin Tablets *(Pfizer)*

A combination of 125 mg. tetracycline with 15 mg. of the antihistamine, buclizine, plus phenacetin, salicylamide and caffeine. *Indications:* Minor respiratory infections. *Dosage:* 2 tablets every 6 hours for adults, or as directed by the physician. *Supplied:* Bottles of 24 tablets.

Biop r Forte *(Armour)*

A ne v development in oral B_{12} therapy ontaining a non-inhibitory intrins c factor which assures optimal abso ption of vitamin B_{12} for full hem poietic activity. Tablets provide the s me rapid and intense hemopoietic re sponse as injectable vitamin B_{12}. *Indic tions:* Nutritional macrocytic anem as; macrocytic anemia of infanc ; macrocytic anemia of pregnanc ; and other conditions responsive o injectable B_{12} therapy. It is also seful as an aid to nutrition, appetit , growth and convalescence; to corr ct deficient intestinal absorption of v tamin B_{12}; and to relieve minor mus le and nerve pains, especially of neu tic origin. *Dosage:* 2 tablets daily, or as directed by the physician. *Supplied:* Bottles containing 30 tablets, available in cartons of 12 bottles.

Cantil *(Lakeside)*

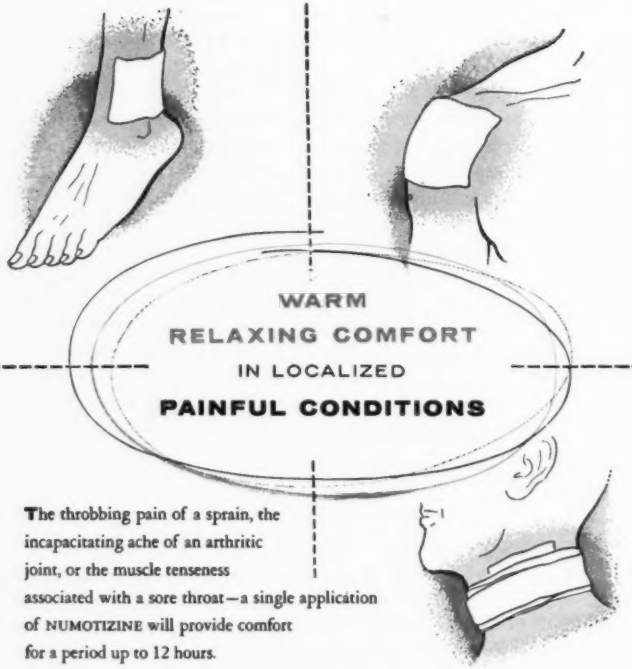
The postganglionic parasympathetic inhibitor N-methyl-3-piperidyl-diphenylglycolate methobromide that has a selective anticholinergic action on the colon. Widespread autonomic disturbance is avoided, and it is usually free of side effects such as urinary retention, dry mouth, or blurred vision. *Indications:* Ulcerative colitis, irritable colon, mucous colitis, spastic colitis, diverticulitis, rectospasm, diarrhea following gastrointestinal surgery, and bacillary and parasitic disorders. *Dosage:* 1 or 2 tablets three times a day with meals, and 1 or 2 tablets at bedtime. *Supplied:* Bottles of 100 scored tablets. Cantil with Phenobarbital, containing 25 mg. of Cantil and 16 mg. of phenobarbital in each tablet, is supplied in bottles of 100 scored tablets.

Benoquin Lotion *(Elder)*

A 5% purified monobenzyl ether of hydroquinone in an isopropyl alcohol-propylene glycol vehicle which exerts an inhibiting effect on pigment formation in melanin-producing cells of the skin. It can be prescribed when the rate of depigmentation with Benoquin Ointment appears too rapid or in those patients who have misused the Ointment. *Indications:* Severe freckling, lentigines and the more diffuse types of hyperpigmentation such as chloasma. *Administration:* Apply 2 or 3 times daily by gentle massage with a small cotton swab to the darkened areas of the skin. Patients should avoid exposure of the treated areas to direct sunlight. Treatment may have to be continued for as long as 6 months to obtain the desired cosmetic effect. Maintenance therapy may be as little as 1 or 2 treatments per week. *Supplied:* 4 ounce bottles.

Sul-Spansion *(S.K.F.)*

A sustained action, broad-spectrum antibacterial that provides a high degree of safety with prompt, prolonged antibacterial activity around-the-clock with a single, oral dose every 12 hours. Each 5 cc. contains 0.65 gm. of sulfaethylthiadiazole. *Indications:* Respiratory, urinary and other infections when due to susceptible microorganisms. *Dosage:* Adults and children (over 75 lbs.) maintenance dose: one tablespoonful every 12 hours; priming dose: double the maintenance dose. Children up to 75 lbs. maintenance dose: ½ teaspoonful every 12 hours per 15 lbs. of body weight; priming dose: double the maintenance dose. *Supplied:* Bottles of 8 fluid ounces.



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IN LOCALIZED
PAINFUL CONDITIONS

The throbbing pain of a sprain, the incapacitating ache of an arthritic joint, or the muscle tenseness associated with a sore throat—a single application of NUMOTIZINE will provide comfort for a period up to 12 hours.

Acting as a warm, moist dressing, NUMOTIZINE produces soothing hyperemia and analgesia in both traumatic and inflammatory congestive conditions.

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Supplied: 4, 8, 15 and 30 oz. jars

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CHICAGO 10, ILLINOIS, U.S.A.

Gitalin in Digitalis Therapy

Recent reports have agreed that gitalin is sometimes of great value when other preparations have failed because of toxicity. The greatest problem of digitalis therapy has always been toxicity. Digitoxin seems to have made this situation worse by eliminating the minor and sometimes helpful symptoms of early toxicity. Gitalin, if these reports are confirmed, will be the first glycoside whose therapeutic dose is less than one half of its toxic dose.

Gitalin should not supplant all other preparations. If digitalization must be rapid, lanatoside C, digoxin or gitalin should be given intravenously;. if minutes matter, ouabain should be used. If the patient is under close observation and moderate speed is all that is required, digoxin or gitalin may be given orally. For slow digitalization, it remains to be proved that digitalis leaf can be bettered, except perhaps by gitalin.

Many believe that lanatoside C is the choice for the treatment of auricular arrhythmias; others that lanatoside C and strophanthin are particularly suited for digitalizing hypertensive hearts with left ventricular failure, while digitoxin is more suited for the treatment of valvular lesions producing right heart failure.

Marriott, H. J. L., *Ann. Int. Med.*, 40:820-827, 1954.

Subacute Bacterial Endocarditis in a Penicillin-Sensitive Patient

A review of the literature on the treatment of *Str. viridans* subacute bacterial endocarditis in penicillin-sensitive patients shows that doctors return to penicillin after failure with other antibiotics. The problem then becomes one of desensitizing the patient to the only antibiotic which offers hope for a permanent cure. Recently the introduction of a potent parenteral antihistamine (Chlor-Trimeton, 100 mg. per cc.) has provided a method of controlling the allergic symptoms of some penicillin-sensitive patients.

Our case was not successfully desensitized by the use of Chlor-Trimeton alone. Three days before the final attempt at desensitization, a five day course of ACTH, 20 mg. every six hours, was started.

Str. viridans subacute bacterial endocarditis in a penicillin-sensitive patient was treated with large doses of Terramycin and erythromycin. Relapses occurred, and desensitization to penicillin with the concomitant use of injectable Chlor-Trimeton also failed. The use of ACTH, started prior to an identical schedule of penicillin desensitization with injectable Chlor-Trimeton, was then successful.

Brenner, J. J., et al., *New York State J. Med.*, 56: 1662-1663, 1956.

Serpasil for the Mentally Ill with Criminal Tendencies

(A preliminary report based on experience with Serpasil in 149 patients selected from 2,000 mental hospital patients who were the most difficult management problems, both from a psychiatric and a behavior standpoint.)

The majority of these patients had Serpasil parenterally, 5 mg. per day for one week. In some cases 3 mg. per day was also given by mouth and increased to 8 mg. when parenteral use was stopped. The oral range was from 1 to 8 mg. per day. A few patients received only oral medication, and a few were given 10 mg. daily parenterally.

In spite of the fact that the subjects chosen might be considered among the worst psychiatric problems, 77 percent of the patients showed improvement and 42.4 percent (61 patients) were markedly improved. Many of them had been institutionalized for years and had had electroshock and other procedures without benefit.

McNeill, J. F., et al., *New York State J. Med.*, 56: 1911-1914,1956.

Malignant Change in Peptic Ulcer

Any case of peptic ulcer that is shown by x-ray to be benign should be treated medically. Medical therapy should be discontinued only if there is subsidence of all symptoms, complete disappearance of the crater, and complete return of gastric flexibility.

If the lesion heals, it should be followed as closely as if there had been a subtotal gastrectomy, and the patient should not be told that it is cured. Five to 10% of these cases will become malignant.

Any patient who does not obtain quick and lasting relief on medical treatment or who, for economic reasons, cannot follow a medical regimen throughout should be treated surgically. Recurrent ulcer is a dangerous lesion and should be removed. Any patient with achlorhydria and an ulcerating lesion should have a gastrectomy. The odds are seven to one that it is cancer. Any ulcer larger than a quarter, lesions of the greater curvature and probably of the cardia or persistent blood in the stools—are all indications for resection. In any case where the diagnosis is in doubt, surgery is probably indicated.

If there is any question of malignancy, one should usually assume that the diagnosis is cancer. The procedure of choice is subtotal resection. Vagotomy is not needed unless there is high acidity.

Patterson, H. C., *North Carolina M. J.*, 17:205-207, 1956.

Electroshock Therapy

For its ability to quickly improve the depressed, the manic, and the acute schizophrenic's behavior and mental processes, electroshock is a formidable type of treatment.

Many deplore the indiscriminate use of electroshock. An argument against shock therapy is its effect upon the memory, and in many cases this is a valid argument. In patients who are hallucinating or who, in an acute schizophrenic illness exhibit grossly inappropriate behavior, it may be considered a desirable effect if the memory for such events is permanently lost through shock therapy.

Hall, Jr., J. K., *Tri-State M.J.*, 4:19-23,1956.

Doctor, would it be helpful to you in your practice to know that there is a food available at reasonable prices in the stores the year round having these attributes:

1. One of the best of the "protective" foods with a well-rounded supply of vitamins and minerals.

2. Low sodium—very little fat—no cholesterol.

3. One of the first solid foods fed babies.

4. Useful in bland and low-residue diets.

5. Mildly laxative.

6. May be used in the management of both diarrhea and constipation.

7. Can be used in reducing diets.

8. Can be used in high-calorie diets.

9. Useful in the dietary management of celiac disease.

10. Useful in the dietary management of idiopathic non-tropical sprue.

11. Useful in the management of diabetic diets.

12. Valuable in many allergy diets.

13. A protein sparer.

14. Favorably influences mineral balance.

15. Useful in the management of ulcer diets.

FOR THE NAME OF THIS FOOD, PLEASE TURN THE PAGE

Control of Chronic Pain with Dl-Alpha Acetylmethadol

The racemic form of alpha acetylmethadol hydrochloride was administered for the relief of postoperative and chronic pain in 76 patients. While 13 had satisfactory pain relief by injection, the preparation was used only orally in the other 63. Forty-nine had chronic pain due to cancer, 10 were in postoperative states, and 17 had transient or chronic pain from various causes.

All but one patient had received narcotic analgesics prior to trial of acetylmethadol, and 36 were considered as partly addicted. Usually, change of therapy was easily accomplished. Doses of 5 to 10 mg., three or four times daily, were well tolerated, safe and highly effective for continued use in ambulatory or bedfast patients in the hospital, at home or in a nursing home.

Transient nausea or vomiting occurred infrequently; when due to metastases, they were controlled by antihistaminics or chlorpromazine. With large daily doses (30 to 50 mg.) of acetylmethadol, constipation was bothersome. A few were lethargic, usually during early use of the drug and when using too large doses. Duration of analgesia from single oral doses during the first two or three months of its trial was four to five hours. Later, dosage was increased.

The majority of our patients with chronic pain due to cancer or other causes have depended upon oral administration of acetylmethadol for satisfactory relief of pain without severe untoward effects for periods of months. This new analgesic is safe and compares favorably to other narcotics now used.

David, N. A., et al., *J.A.M.A.*, 161:599-603, 1956.

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Depression of Gastric Secretion by a New Anticholinergic Agent

The anticholinergic medication N-ethyl-3-piperidyl-benzilate methobromide (Piptal) was studied in 88 patients with elevated and normal gastric secretion. In 77 (88%) there was a decrease in the output of free acid, in 35 (40%) anacidity for 30 minutes or longer was produced.

In no case was complaint made of any side effects. Piptal is apparently unique in that it represents a potent antisecretory agent without side reactions.

Responses to the same dosage of the drug are varied. Larger dosages may not increase the number of patients on whom the drug will have an inhibitory effect. Prolonged use did not consistently or permanently depress basal gastric secretion.

Anticholinergic drugs serve as an adjunct in the treatment of peptic ulcer, not as a substitute for effective antacid management.

Klotz, A. P., *Am. J. Dig. Dis.*, 1:108-115,1956.

Treatment of Complete Atrioventricular Heart Block

In complete atrioventricular heart block, the ventricular rate is 20 to 40. The block is usually chronic and fixed in older patients, with varying degrees of myocardial damage.

In asymptomatic cases, only treatment of the underlying condition is indicated. In these patients, syncopal attacks are the usual cause of death. An irregular pulse of 80 to 110 suggests ventricular flutter (ventricular rate of 250 with a pulse deficit). In the absence of electrocardiogram, therapy is:

1. In the case of ventricular asystole, direct, vigorous thumping on the precordium. Patients have been kept alive with this method up to 12 hours.

2. In the case of cardiac asystole, intracardial injection of 0.25 to 1 cc. of 1:1000 solution of Adrenalin may be lifesaving. It is contraindicated in episodes caused by ventricular flutter and/or ventricular fibrillation.

3. Repeated seizures that closely follow one another are usually associated with a severe grade of cerebral anoxia and nearly always indicate imminent death. This state may occasionally be improved by the intravenous use of Aminophylline accompanied by the administration of oxygen.

Bellet, S., *The Heart Bull.*, 5:46-48,1956.

Murmurless Bacterial Endocarditis

Unless subacute bacterial endocarditis is treated within a few weeks of its onset, structural damage to the heart valves inevitably occurs. This may shorten the patient's life. In the first few weeks of the disease, physical signs are seldom conspicuous, and the symptoms are often more helpful. It should be suspected in every patient with undiagnosed fever of more than a week's duration, whether or not a heart murmur is present. Blood culture is a simple and economical investigation, and it should be performed repeatedly whenever such suspicion exists. If the diagnosis remains uncertain, the patient should be given the benefit of the doubt and be promptly treated for this infection. Indiscriminate use of antibiotic drugs may seriously interfere with the proper management of these cases.

MacGregor, G. A., *Brit. M. J.*, 4974:1011-1013, 1956.

Actions of the Thyroid Hormone

In the absence of thyroid tissue, the BMR sinks to a very low level but does not become zero. It is now believed that cells in general have the ability to produce thyroxine. The thyroid gland has long taken over the duty of providing the requisite amount of hormone for the cells of the body.

In the condition known as "thyroid storm," it is important to realize that all of these symptoms of epinephrine overactivity can be controlled to some extent by the judicious use of large doses of morphine. I do not advocate the use of morphine in the routine treatment of thyroid hyperfunction. In a crisis, it may be an exceedingly valuable therapeutic aid. In the hyperthyroid patient, the tolerance for morphine is higher than normal, and the reverse is true in hypothyroidism.

One of the effects of the thyroid hormone, which is frequently forgotten, concerns renal function. In the absence of adequate quantities of thyroid hormone, all of the activities of the kidney are impaired. In thyroid lack, the rate of cell oxidation falls, a part of the phosphate which has been bound in an organic state is broken down to an inorganic state, and there is a resultant rise in the osmotic pressure within the cell. Water flows into the cell, and the result is hydremia, which we refer to as the myxedema of the hypothyroid state. Some phosphate is lost, together with glucose. Thus, the renal tubule becomes boggy and can no longer function normally.

There is also a failure of growth and cellular differentiation, especially in the development of secondary sex characteristics. The last-named result can be attributed directly to the absence of thyroid hormone. The other endocrine organs function poorly, so that both the testicular and the ovarian hormones are produced at less than their normal rates. The same is true for the maintenance of pregnancy and for lactation. In the absence of adequate supplies of thyroid hormone, both of these functions may fail.

McIntyre, A. R., *J. Iowa M. Soc.*, 46:127-130, 1956.

Pulmono-cardiac Failure

Chronic cor pulmonale is a dysfunction of the heart secondary to longstanding pulmonary disease, which may be due to anatomical alterations of the thoracic cage, of the pulmonary vascular system, or of the pulmonary parenchyma. The patterns of pulmonary fibrosis, not the extent, determine the degree and type of cardio-pulmonary disturbance.

In patients who are chronically cyanotic due to pulmono-cardiac failure, the respiratory center is not sensitive to carbon dioxide. An emergency stimulus for respiration is from anoxemia acting through the aortic and carotid sinus reflexes. If continuous oxygen is used in therapy, this emergency stimulus is lessened with resulting hypoventilation, and increased carbon dioxide retention. This may progress to respiratory acidosis, "carbon dioxide narcosis," and even to death.

Prolonged diuresis with a carbonic anhydrase inhibitor, acetazolamide, (Diamox) may be useful in cases of chronic cor pulmonale, not only in relieving the congestive failure, but in helping to reduce the carbon dioxide retention.

Whitlock, H. H., *Nebraska M. J.*, 41:230-238,1956.

Effects of Prolonged Cortisone Therapy on Growth, Skeletal Maturation and Metabolic Status

It appears that cortisone can be administered over considerable periods of time to growing children without altering the child's ultimate stature. For hypopituitary patients the dosage must be kept very low so that growth is not inhibited altogether. In the child with Addison's disease, physiologic substitution dosages appear to be without effect on either growth or maturation.

For children with congenital adrenocortical virilism, it appears desirable to start the hormone early, and to administer it continuously in doses sufficient to reduce rates of skeletal growth and maturation to average normal levels.

Finally, for endocrine-normal children who have not attained sexual maturity, it seems essential to reduce dosages below growth-suppressing levels from time to time to permit them to regain ground lost during intervals of heavy dosage before the age when recovery of statural position is precluded by closure of skeletal epiphyses.

Blodgett, F. M., et al., *New England J. Med.*, 254: 636-641,1956.

Nasal Allergy Symptoms Managed By Clistin

Clistin Maleate produced good to excellent results in 85% of perennial allergic rhinitis sufferers.

Of 94 patients suffering from a variety of allergic complaints, 68 were being treated for year-round nasal allergy. The authors state that this type usually doesn't respond as well to treatment with antihistaminics as do seasonal allergic conditions.

Symptoms disappeared in the following order: nasal itching, sneezing, runny nose and finally nasal obstruction. When side effects occurred, they were mild except in two patients.

Other allergic complaints reported successfully treated by the drug were pruritus, urticaria and allergic conjunctivitis.

Dosage generally was 4 to 16 mg. daily, by mouth.

Garat, B. R., et al., *J. Allergy*, 27:57,1956.

New Physical Sign In Chronic Hypoalbuminemia

A previously unrecorded physical finding of paired white bands in the finger-nails of patients with low blood albumin is described. This finding is unique because it reflects a specific biochemical abnormality —chronic hypoalbuminemia.

Although white bands are most often seen in patients with the nephrotic syndrome, they are not specific for any one disease state. Paired white bands do not regress with vitamin therapy, but they will disappear when the serum albumin is maintained above 2.2 g. per 100 ml.

Muehrcke, R. C., *Brit. M. J.*, 4979:1327-1328, 1956.

Ketosis in Diabetes

Little has been said about complicated laboratory measures or studies in the detection of ketosis. Initial blood sugar and carbon dioxide combining power tests are helpful, but for all practical purposes, careful attention to the ketones in the urine specimens and sound clinical judgment are adequate to reverse the ketotic state.

Rippy, E. L., *J. Louisiana State M. Soc.*, 108:185-190,1956.

Importance of the Bioassay of Digitalis

Digitalis is a potent drug that is dangerous when administered in excessive amounts. Some samples of the leaves are almost inert, while others are from two to five times more potent than the average.

The first bioassay was developed in 1898. The systolic standstill of the frog's heart was used as an end point. The U.S.P. IX, which became official in 1916, adopted an optional one hour frog method. In the U.S.P. XII the I-h. frog method was replaced by the *IV* cat method for the reason that digitalis preparations that have been aged showed deterioration with the frog assay but retain their original strength when assayed on cats and humans. Cats were scarce and expensive. The U.S.P. XIV substituted pigeons for cats after first determining that there was close agreement of the pigeon method with the cat and human assays.

It has frequently been argued that there is no relationship between standstill of an animal's heart as an end point in an assay and the efficacy of digitalis on the human heart, since digitalis is used as a cardiac tonic in the case of man and not to stop the heart of an animal. This argument is fallacious, since the effectiveness of the cat and pigeon methods is based on results obtained by the standardization of digitalis on humans.

Despite the fact that pure glycosides of digitalis have been prescribed extensively in recent years, there are more than 50 pharmaceutical manufacturers and repackagers in this country who are marketing digitalis preparations. The Division of Pharmacology of the Food and Drug Administration surveys the preparations on the market, and adulteration of the preparations is detected by means of their biologic assay.

Braun, H. A., *Antibiotics & Chemotherapy*, 6:188-190, 1956.

Bromide Intoxication

Interest in bromides as a cause of mental disturbances was stimulated by a report in 1927; 21 percent of 238 patients at a psychiatric clinic had elevated blood bromide levels on admission. Of the 238 patients, 8 percent showed evidence of bromide intoxication.

Because of the easy availability of proprietary bromide preparations—and these do not always reveal their bromide nature in their name—the physician should be alert to the possibility of bromides as a factor in any mental disturbance, particularly in a bizarre and patternless one.

The diagnosis of bromide intoxication is not to be ruled out in any patient with mental symptoms and a history of bromide medication. Recognizing the possibility of bromism and withdrawing bromide medication is of utmost importance. All other procedures are aimed at increasing the rate of bromide excretion. Maintaining a large urine volume is very important. Use of large amounts of sodium chloride or ammonium chloride is recommended in the belief that the added chloride will hasten bromide excretion in the urine. Mercurial diuretics are used to increase bromide excretion in the urine.

It is necessary at times to sedate these patients, and paraldehyde is considered the safest drug.

Hannigan, C. A., et al., *J. Maine M. A.*, 47:71-72, 1956.

Early Diagnosis of Bronchogenic Carcinoma

Bronchogenic carcinoma is notorious for first presenting symptoms and findings suggestive of bronchopneumonia, and responding temporarily to antibiotics. In addition to the usual cough, hemoptysis, chest discomfort, dyspnea, etc., one may be confronted with secondary phenomena which may or may not be metastatic. Central nervous system metastases are common. The nature and location of this tumor readily permits widespread dissemination of metastases. A knowledge of these secondary symptoms and findings will raise the physician's index of suspicion and lead to early chest x-rays; and, even where these are negative, to cytologic, bronchoscopic, bronchographic and planigraphic studies.

Clubbing of the fingers alone, or with long-bone proliferation and arthropathies known as pulmonary hypertrophic osteoarthropathy, often occurs early—while the pulmonary lesion may still be in a resectable stage.

Pattison recently reported six cases of bronchogenic carcinoma with pulmonary osteoarthropathy, in five of which this was the earliest significant finding. It is apparent then that, in some cases, we have available a diagnostic sign which may lead to the early diagnosis of a bronchogenic carcinoma.

Kline, R. F., *Minnesota Med.*, 39:462-464, 1956.

Inferior Vena Cava Ligation

Four patients had thrombophlebitis of the lower extremity, a pulmonary embolus, and progression of the thrombus in spite of anticoagulant therapy. In three cases, there was extension of the thrombus above the inguinal ligament, and in the fourth case, extension of the thrombus into the inferior vena cava following common iliac ligation. The operation was performed as a life-saving procedure in each case. The extra-peritoneal approach was used in all cases with no operative mortality. There has been no evidence of subsequent pulmonary emboli.

The cases were followed 5 to 33 months. All developed immediate postoperative edema. One case still had severe edema, two mild, and one no edema. Postoperative thrombophlebitis was a complication in two cases—almost disabling in one. Another partially restricts activities because of leg pain on walking and increased edema on standing for long periods. Two have returned to full employment with few or no complications.

Stoneburner, J. M., *Virginia M. Monthly*, 83:347-351, 1956.

Nodular Goiters

Clinically palpable thyroid nodules are present in 4% to 12% of the population of the United States. The incidence of cancer in nodular goiters may be as high as 2% to 5%. The incidence of cancer in surgically treated multinodular goiter is 3% to 10%, and that in uninodular goiter 9% to 33%.

Benign thyroid nodules rarely undergo malignant transformation, so surgical therapy as a prophylaxis against carcinoma is not indicated. Excisional therapy is indicated for nodules that are considered likely to be carcinomatous.

A scheme for I^{131} evaluation of thyroid nodules for malignancy or benignancy is presented. Whereas 23% of the physiologicaly *hypo*active nodules have been found to be malignant, the *hyper*active nodules are uniformly benign. These nodules may be successfully treated medically.

Perlmutter, M., et al., *New England J. Med.*, 255:65-71, 1956.

Management in Cases of "Silent" Gallstones

Medical and surgical authorities generally agree that in almost all cases of gallstones, the gallbladder should be removed. Acute cholecystitis is a common and serious sequel.

Hydrops and empyema of the gallbladder must be suspected if the patient is getting worse two or three days after the onset of acute cholecystitis. In empyema, the cystic duct is occluded by a stone.

Cancer of the gallbladder almost never occurs except in the presence of stones.

Bartlett, R. W., *Mississippi Valley M. J.*, 78:134-135, 1956.

Colles' Fracture in the Aged

In the first 12 to 24 hours local injection of procaine into the Colles' fracture site usually gives good muscle relaxation. Reduction should be tried once only, and not repeated if unsuccessful. The bones may be so brittle that repeated attempts will result in greater comminution.

If the position is not changed in attempting reduction, no splints should be applied, but active motion of fingers, wrist and forearm urged from the start. If the impaction is broken up, the forearm and proximal hand should be immobilized in flexion and ulnar adduction for eight weeks. Meanwhile, motion of all finger joints, elbow and shoulder must be carried out to the limit many times a day.

Kennedy, R. H., *Bull. New York Acad. Med.*, 32:487-494, 1956.

Trends in Varicose Vein Surgery

Radical surgery is the only form of therapy that appears to be effective. Surgery is advocated for all varicose veins except small segmental dilations present for some time and showing little tendency to extend. It is unlikely that there will be a return to less radical measures until some completely new form of treatment is developed.

Heller, R. E., *Illinois M. J.*, 110:6-9, 1956.

Skin Planing in the Treatment of Acne Scars

Dermabrasion produces extremely satisfactory results in previously hopeless cases. In a recent survey, 97 physicians with a total of 2,206 cases followed long enough for evaluation, felt that the results were extremely satisfactory.

Pass, B. J., *J. Tenn. M. A.*, 49:196-197,1956.

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liography:
N. N. R. p. 466 (1956). 2. Henman E., Kaplan, A., and Unna, J. Pharm. Exp. Therap., 97:331 (50). 3. Hermann, J. F., and th, R. T.: Journal-Lancet, 271 (1951). 4. Frohner, R. N.: ky Mountain Med. J. (1954). Winder, C. V., Thomas, R. W., d Kamm, O.: J. Pharm. and p. Therap. 100:42(1950). 6. Goldberg, A. A., and Shapero, M.: J. arm. and Pharm. col. 6:171 54).

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Decubitus Ulcers Treated With Papain-Urea-Chlorophyllin Ointment*

On the basis of results in 24 cases of decubitus ulcers in elderly mental patients, it is concluded that the new papain-urea-chlorophyllin ointment* is superior to any agent previously used for the management of these lesions. It ordinarily removes all necrotic tissue and debris in two to four days, and encourages early formation of healthy granulations, even during the period when debridement is incomplete. Continued application results in prompt, complete healing of previously resistant lesions. The new skin is soft and supple with good blood supply in contrast to the contracted scar tissue ordinarily associated with slow-healing wounds. It also reduces malodors of wounds rather uniformly within 24 to 48 hours. The ointment was generally well tolerated, even in highly inflammatory conditions.

* Panafil Ointment, supplied by the Rystan Co., Mount Vernon, N. Y.
Miller, Jr., E. W., *New York State J. Med.*, 56: 1446-1448, 1956.

Late Follow-Up Study of Radiologic Changes After Mitral Valvuloplasty

Fifty-five patients who had undergone mitral valvuloplasty were studied at an interval of 12 to 30 months after operation.

In a minority of the cases, the heart and great vessels became smaller, and all of these showed marked clinical improvement.

Although 44 of the 55 patients have been restored to normal, or almost normal life, the majority showed no decrease in heart size and, in a few, the heart was larger.

Gary, J. E., *New England J. Med.*, 254:831-835, 1956.

briefs: OBSTETRIC

Toxemia and Hypertension

A study was made of 218 patients who underwent a normal first pregnancy and 137 patients who experienced toxemia in their first pregnancy. The range of observation was 21 months to 10 years.

The patient who has a normotensive pregnancy is essentially a normotensive individual. The patient who exhibits hypertension solely in pregnancy was hypertensive prior to pregnancy. The patient who exhibits the pre-eclamptic or eclamptic form of toxemia may be either normotensive or hypertensive prior to pregnancy, and the postpartum blood pressure will reflect the prepartum state.

The duration and severity of toxemia of pregnancy are not factors in the production of post-toxemic hypertension.

Toxemia of pregnancy does not permanently exacerbate hypertension.

The unrecognized hypertensive state is responsible for the appearance of hypertension following toxemia of pregnancy in the vast majority of cases. This lack of recognition results from the variability of blood pressure and the decrease of blood pressure early in pregnancy.

Tillman, A. J. B., *New York State J. Med.*, 56:374-378, 1956.

Treatment of the Cord in the Newborn

In an attempt to discover the safest procedure, the following four methods were used for a trial in the maternity wards:

1. Traditional routine of treatment with spirit, powder, lint dressing and binder.

2. Wharton's jelly first squeezed out, then as in No. 1.

3. No dressing applied, the only treatment being the daily application of spirit to the cord base.

4. Wharton's jelly first squeezed out, then as in No. 3.

Early in the trial, a cord treated by the third group became badly infected with Bact. coli, and it was considered unsafe to continue this procedure.

Four cords in the fourth group became infected and produced an offensive discharge. These four cases, as well as the one in the third group, were successfully treated either with streptomycin intramuscularly or with oral oxytetracycline. There was no instance of cord infection in the first or second group.

The application of a dressing to the cord appears highly desirable for the prevention of infection. The expression of Wharton's jelly does not seem to offer any additional protection where such a dressing is used.

The conclusion is that the traditional method of treatment with spirit, powder, lint dressing, and binder, as carried out in the first group, is the most satisfactory of the four methods that were tried.

Murray, A. B., *Brit. M. J.*, 4982:1530-1531, 1956.

Dystocia Due to Fecalith in Rectosigmoid Pouch

A woman, 20 years of age, when first seen gave a history of passing feces through the vagina since birth. There was a fistula between the rectum and a point just inside the vaginal orifice. The anus was imperforate, distention felt to be due to fecal retention, which the x-rays confirmed; otherwise nothing of note.

A transverse loop colostomy with decompression was performed. After recovery and after evacuation of fecal impactions from the large bowel, the fistulous tract was closed, and anorectal continuity established. The colostomy was allowed to remain and the rectum soon became stenotic in spite of attempts at dilation. Two months after the second procedure there was spontaneous delivery of a six pound stillborn infant. Double-loop colostomy remained.

A few years later, the patient was admitted to hospital at full term in early labor. The cervix was well effaced and 1 cm. dilated, vertex high above inlet, a 9 cm. mass in true pelvis to the left, stony hard, slightly movable. The rectum would not admit a finger.

At operation under spinal anesthesia, a viable infant, weighing eight pounds, was delivered. The mass was located in the rectosigmoid and a second smaller mass (6 cm.) was in the sigmoid above the first.

The patient refused corrective surgery, was well adjusted to her colostomy, and failed to appear for postoperative check-up.

Palles, L. M., *J. Louisiana State Univ. School Med.* 108:262-263, 1956.

briefs: GYNECOLOGIC

Use of Progesterone in Treatment of Post-partum Psychosis

The study excluded patients who became psychotic during pregnancy. Most patients had feelings of marked depression and suicidal tendencies were common. Some were primarily overactive; a few were catatonic. Delusions of varying degrees of bizarreness were common. Most of these women apparently had adequate mental health before delivery.

Progesterone was given, 100 mg. intramuscularly every day for ten days, then orally, 150 mg. a day. After discharge from the hospital, some patients continued the oral dosage for periods of a few weeks to many months.

Thirty-nine hospitalized patients with post-partum psychosis were studied. Progesterone in large amounts was used in the treatment of 16 of these patients, most of whom had gone into relapse after remissions achieved by various combinations of psychotherapy, insulin and electric shock. When progesterone was given, it was used alone or in combination with other therapy. The data show that remissions achieved without concurrent administration of progesterone were often temporary, whereas remissions achieved while progesterone was being administered were lasting (the one exception was a patient who had been psychotic for the greater part of seven years before receiving the hormone). The use of progesterone increased the remission rate in post-partum psychosis to almost 100%.

Bower, W. H., et al, *New England J. Med.*, 254:157-160, 1956.

Surgical Treatment of Endometrial Carcinoma

The principle of treatment of endometrial carcinoma is the eradication of all tumor cells from the largest amount of pelvic tissue, with the least possible delay, after the diagnosis is established. Combined treatment digresses from this principle by use of an agent that clears tumor from less tissue than can be accomplished by hysterectomy, and by delay in the performance of hysterectomy. Primary surgical treatment is superior to combined therapy by the proportion of cases in which extrauterine metastasis occurs during the period of delay that precedes operative removal of the uterus. The difference in the accomplishment of the two methods is slight; the number of cases available for evaluation is inadequate to equate the variables. It is recommended that the method of therapy be selected according to the principle of treatment, rather than by a comparison of survival rates.

Smith, J. C., *J.A.M.A.*, 160:1460-1464, 1956.

Menstrual Irregularity

When amenorrhea and oligomenorrhea are prominent symptoms, differential diagnosis is made in the majority of patients on the clinical history alone. The basal temperature aids in differentiating the ovulatory from the anovulatory cycle.

Estrogen in courses of twenty days is of value in bringing the asexual, biologically retarded girl with primary amenorrhea into a reasonable state of somatosexual maturity.

Cyclic estrogen-progesterone establishes a normal bleeding cycle and sometimes induces ovulation in the long-interval anovulatory cycle. It is of no value in the long-interval ovulatory cycle.

Cortisone for the oligomenorrheic hirsute, infertile woman is occasionally helpful.

Surgery is indicated in the Stein-Leventhal syndrome, androgenizing tumors of the ovary and adrenal cortex, and in rare cases of Cushing's syndrome with adrenal cortical hyperplasia.

Bickers, W., *Virginia M. Monthly*, 83:202-205, 1956.

Injuries of the Urinary Tract Due to Gynecological Surgery

During pelvic surgery on a woman, the urinary bladder may be torn, cut, sutured or have its blood supply compromised. These injuries cause little trouble if they are recognized at the time and dealt with promptly.

There is no certain method by which ureteral injuries can be obviated. In difficult cases, introduce ureteral catheters before operation. During its course, identify all structures before clamping, cutting, ligating or suturing. Use no mass ligatures and use absorbable suture material in or near the urinary tract. Place sutures carefully in the pelvic peritoneum, and check the continuity and course of the ureters before closing.

Three illustrative cases are presented.

A woman, 49 years of age, with third degree retroversion of the uterus and varicosities of the broad ligament, had a pan-hysterectomy, and was discharged on the eighth day. The sixteenth postoperative day, she was readmitted with small-bowel obstruction. The abdomen was reopened, and on the left deep in the pelvis, a large abscess was found; a loop of ileum, densely adherent, completely obstructed. The left ureter could not be catheterized beyond 6 cm., and the left kidney was hydronephrotic.

A woman, 30 years of age, had a pan-hysterectomy for intracervical submucous fibroid. The cervix contained a 11-cm. leiomyoma. The surgery was difficult. There was postoperative hematuria, pain in the left renal area, and urinary leakage from the vagina. Cystoscopy revealed the bladder intact but severely traumatized, and both ureters were obstructed 4 to 5 cm. above the bladder. There was no function of the left kidney, and a delayed function of the right kidney. Diagnosis: ligation of the left and incision of right ureter.

A woman, 52 years of age, was admitted with diagnosis of endometriosis of the left ovary. Previously the uterus, tubes, and right ovary had been removed. Left oophorectomy was done. Following this, there was pain in the left flank, and on the fourth day, no excretion of contrast medium by the left kidney and complete obstruction of the left ureter at 7 cm. Diagnosis: ureteral obstruction due to a suture.

Schlinger, G. A., *Kentucky M. J.*, 54:855-859, 1956.

BOOK REVIEWS

Medical Physiology

edited by Philip Bard, The Johns Hopkins University. Tenth edition, with 438 illustrations, 5 in color. The C. V. Mosby Company, St. Louis, Mo. 1956. $14.00

This book is a descendant in the tenth generation of the Physiology and Biochemistry of Modern Medicine by Professor J. J. R. Macleod. It is said that the present title is chosen because this book deals mainly with those portions of the science of physiology which concern medical students of every grade. The physiology of every system, organ and tissue of the body is described by the greatest authorities in each field.

A cursory review impresses one with the lack of dogmatism and with the willingness to state the limitations of present knowledge as regards any life process. Many who studied physiology of digestion 30 to 50 years ago will find here that little has been added to knowledge in this field. The increase in knowledge of the physiology of an endocrine gland and of the central nervous system has been as valuable as it is spectacular.

Psychotherapy and Culture Conflict

by Georgene Seward, Ph.D., University of Southern California; with Case Studies by Judd Marmor, M.D., University of California, Los Angeles. The Ronald Press Co., New York, N. Y. 1956. $6.00

We are told that recent developments in social anthropology have stimulated transcultural comparisons of personality, thereby facilitating a cultural orientation in psychotherapy. We are also informed that to indicate the general rate of interest, classical psychoanalysis has been taken as a point of departure, stressing in that system those aspects touching on cultural matters that have often been overlooked by critics of Freud.

Physician's Handbook

by Marcus A. Krupp, M.D., et al., Stanford University School of Medicine. Ninth edition. Lange Medical Publications, Los Altos, California. 1956. $3.00

A handy reference to up-to-date practice, with many valuable tables.

New Bases of Electrocardiography

by Demetrio Sodi-Pallares, M.D., National University of Mexico, with the collaboration of Royall M. Calder, M.D., Baylor University. 520 illustrations. The C. V. Mosby Co., St. Louis. 1956. $18.50

We are reminded that it is not enough to recognize the electric image resulting from a certain occurrence in the heart muscles; it is important also to understand the reason for the instant ECG. It is said that these scientific bases always presented difficulty to the physician. This work undertakes to bring together and explain these bases and demonstrate the results of their application.

It is significant that this English edition is being published five years after the third edition in Spanish—an edition that within a few months was sold out. Those who desire intimate knowledge of the profundities of the subject of electrocardiography will welcome this book with enthusiasm.

The Interpretation of the Unipolar Electrocardiogram

by Gordon B. Myers, M.D., Wayne University College of Medicine. Illustrated. The C. V. Mosby Company, St. Louis, Missouri. 1956. $4.75

ECG interpretation is considered as an entity, thus facilitating evaluation of this diagnostic measure. It is emphasized throughout that the ECG is an adjunct to other measures of diagnosis, never to take precedence of knowledge gained by history-taking and other methods of investigation.

Psychosomatic Aspects of Surgery

edited by Alfred J. Cantor, M.D., Jersey City Medical Center, and Arthur N. Foxe, M.D., Editorial Boards: Journal of Nervous and Mental Disease, etc. The Proceedings of the First Annual Meeting of the Academy of Psychosomatic Medicine, held in New York City, Oct., 1954. Grune and Stratton, Inc., New York, N. Y. 1956. $6.50

It is refreshing to see in the opening sentence of the preface the statement, "Psychosomatic medicine includes all phases of medical practice." Since the term began to appear frequently in medical journals, this reviewer has maintained that all medicine is psychosomatic medicine. This text is made up of the major papers presented at the first Annual Seminar of the Academy of Psychosomatic Medicine, in 1954—a seminar devoted to the psychosomatic aspects of surgery.

The objective of the Academy of Psychosomatic Medicine is stated as having every G.P. know the rudiments of preventive and remedial psychotherapy.

Current Concepts in Digitalis Therapy

by Bernard Lown, M.D., Peter Bent Brigham Hospital and Samuel A. Levine, M.D., Harvard Medical School. Little, Brown and Company, Boston, Toronto. 1954. $3.50

Sir William Osler often said that there was no better means of judging a doctor's ability than by the way he used digitalis. In this booklet, two doctors of first-class training and broad experience offer guidance in the use of this valuable drug.

Plastic Repair of Genito-Urinary Defects

by George Bankoff, M.D., D.Ch., F.R.C.S. Ed., F.R.F.P.S., Georgetown University Medical School and Gallinger Municipal Hospital, Washington, D.C. Philosophical Library, Inc., New York, N. Y. 1956. $17.50

The author believes that there is a great need for this kind of book and offers two paramount reasons. First, he states that genitourinary defects, congenital and acquired, are not as rare as thought only a few years ago, indeed, not rare at all. Second, there is a need for presentation, in one concise treatise, of the information already available. Many operative techniques are described by illustration only.

The Drug Addict As A Patient

by Marie Nyswander, M.D., New York City Department of Health, Grune & Stratton, Inc., New York, N. Y. 1956. $4.50

Estimates of the number of drug addicts in the United States have a wide range—from 60,000 to one million. It is realized that only a slight impact has been made on drug addiction in the 40 years since the passage of the Harrison Narcotic Act. In her early years of practice, the author treated drug addicts in the traditional manner—prolonged hospitalization and complete withdrawal. As time went on, she found it better to deviate from any hard and fast rule and individualize the methods of treatment. The book is geared to general practice, and it is hoped that it will be useful to a wide variety of professional people who have to do with the management of addictions and addicts.

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